

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 g
 Edition : 11.03.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 745 803
 Injection pump
 Pump designation : PESSP120A720LS7152
 EP type number : 0 412 725 801
 Governor
 Governor design. : RQ300/1050PA690-2
 Governor no. : 0 421 801 427

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM429 LA

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

A01

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.70...13.80

Del. quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.6

Del. quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 800

Del. quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70

Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.4

Testing:

Speed rpm : 200

Minimum rack travel: 8.30

Speed rpm : 300

Rack travel in mm : 6.30...6.60

Rack travel in mm : 2.00

Speed rpm : 365...405

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 11.20...11.50

Measurement

Speed 1/min : 500

1st pressure hPa : 250

Rack travel in m: 11.40...11.50

2nd pressure hPa : 500

Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800

Speed rpm : 600

Del. quantity cm³/ : 204.0...210.0

1000 s: (201.0...213.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del. quantity cm³/ : 135.0...137.0

1000 s: (132.0...140.0)

Spread cm³ : 8.00

1000 s: (12.0)

BREAKAWAY

A02

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm³/ : 130.0...150.0

1000 s: (126.0...154.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9.0 c
Edition : 19.05.88
Replaces : 15.5.87
Test oil : ISO-4113

Combination no. : 0 402 746 801

Injection pump
Pump designation : PE6P120A32ORS7103
EP type number : 0 412 626 805
Governor
Governor design. : RQV200...1100PA712
Governor no. : 0 421 813 442

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DSC9 01

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 6.00...8.00

A03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.00...12.50
& maximum rack tra: 21.00
Difference ° CS : 1.00...1.70

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 17.8...18.0

100 s: (17.5...18.3)

Spread cm3 : 0.7

100 s: (1.0)

2nd speed rpm : 225.0
Rack travel in mm : 4.6...4.8
Del.quantity cm3/ : 1.5...1.9
100 s: (-)
Spread cm3 : 0.3
100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
travel mm : 1.10...1.50
2nd speed rpm : 350
travel mm : 2.60...3.20
3rd speed rpm : 650
travel mm : 4.30...4.90
4th speed rpm : 1145
travel mm : 7.50...7.70
5th speed rpm : 1300
travel mm : 8.90...9.30

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1160
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 178.0...180.0
1000 : (175.0...183.0)
Spread cm3 : 7.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 11.50
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1450
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 6...14

Testing:
Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 225
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 295...355

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.50...12.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.20...10.30
2nd pressure hPa : 435
Rack travel in m: 11.90...12.00
3rd pressure hPa : 335
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1100

A04

Del.quantity cm3/ : 177.0...185.0
1000 s: (175.0...187.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 138.0...142.0
1000 s: (136.0...144.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 15.0...19.0
Spread cm3 : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm
Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Check and set without R0B0 diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over
on Oct. 4, 1984
Start of delivery - engine: 18° before
TDC at control-rod travel =
6.00...8.00 mm
Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 a 1
Edition : 07.03.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 806

Injection pump
Pump designation : PES6P120A72OLS7114
EP type number : 0 412 726 802
Governor
Governor design. : RQ300/950PA774-1
Governor no. : 0 421 801 419

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447LA

1st version kW : 350.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.40...14.60

Del.quantity cm3/ : 24.0...24.2

100 s: (23.7...24.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.0...6.3
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -2
Speed rpm : 650
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 750
Del.quantity : 240.0...242.0
1000 : (237.0...245.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 650
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.70
Speed rpm : 995...1010
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1150
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 6.00...6.30
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

2nd speed rpm : 950
Rack travel in m: 13.70...13.90
3rd speed rpm : 750
Rack travel in m: 14.90...15.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 750
Rack travel mm : 14.40...14.60

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.60...11.80
2nd pressure hPa : 500
Rack travel in m: 13.50...13.70
3rd pressure hPa : 920
Rack travel in m: 14.50...14.70
4th pressure hPa : -
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 950

A07

Del.quantity cm3/ : 232.0...236.0
1000 s: (229.0...239.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 750
Del.quantity cm3/ : 250.0...254.0
1000 s: (247.0...257.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 139.0...141.0
1000 s: (136.0...144.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 230.0...250.0
1000 s: (226.0...254.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,7 f
Edition : 08.06.88
Replaces : 31.7.87
Test oil : ISO-4113

Combination no. : 0 402 746 808

Injection pump
Pump designation : PES6P120A720LS7107
EP type number : 0 412 726 801
Governor
Governor design. : RQ300/1100PA805
Governor no. : 0 421 801 352

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM447ha

1st version kW : 206.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.40...13.50

Del. quantity cm³/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.2

Del. quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 750

Del. quantity : 197.0...199.0

1000 : (194.0...202.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.40
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 11.00...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : 230
Rack travel in m: 11.30...11.50
2nd pressure hPa : 370
Rack travel in m: 11.70...11.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750
Speed rpm : 600
Del.quantity cm3/ : 193.0...196.0
1000 s: (190.0...199.0)
Spread cm3 : 8.00
1000 s: (12.)
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a
 Edition : 08.04.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 810
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA848K
 Governor no. : 0 421 815 168

Customer-spec. information
 Customer : MACK

Engine : E6-350 4VH

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.30...10.70
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del. quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.0...4.2

Del. quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 3.10...3.30

3rd speed rpm : 850
 travel mm : 5.90...6.10

4th speed rpm : 1000
 travel mm : 7.50...7.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del. quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 53...61

Testing:
1st rack travel in: 12.90
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 5.50
Speed rpm : 325
Rack travel in mm : 4.00...4.20

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.90...14.00
2nd speed rpm : 625
Rack travel in m: 14.10...14.20
3rd speed rpm : 800
Rack travel in m: 14.00...14.10
4th speed rpm : 500
Rack travel in m: 0.00...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 625
Pressure hPa : 900
Rack travel mm : 14.10...14.20

Measurement
Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 275
Rack travel in m: 10.00...10.10
3rd pressure hPa : 570
Rack travel in m: 12.30...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 625
Del.quantity cm³/ : 254.0...260.0
1000 s: (251.0...263.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 136.0...140.0
1000 s: (134.0...142.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...180.0
1000 s: (130.0...190.0)
Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.00...4.20
Del.quantity cm³/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a1
 Edition : 08.04.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 814
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...850PA848-1K
 Governor no. : 0 421 815 169

Customer-spec. information
 Customer : MACK

Engine : E6-300 4VH

1st version kW : 224.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.30...10.70
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.90...13.00

Del. quantity cm3/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del. quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del. quantity : 200.5...202.5

1000 : (197.5...205.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 11.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.90...13.00
2nd speed rpm : 700
Rack travel in m: 13.30...13.50
3rd speed rpm : 600
Rack travel in m: 13.50...13.70
4th speed rpm : 500
Rack travel in m: 0.00...13.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.50...13.70

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.40...9.80
2nd pressure hPa : 280
Rack travel in m: 10.40...10.50
3rd pressure hPa : 510
Rack travel in m: 12.20...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 217.0...223.0
1000 s: (214.0...226.0)
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 233.0...239.0
1000 s: (230.0...242.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 147.0...151.0
1000 s: (145.0...153.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack travel: 11.90
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 9.40...9.80

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a2
 Edition : 15.04.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 815
 Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...850PA848-2K
 Governor no. : 0 421 815 170

Customer-spec. information
 Customer : MACK

Engine : E6-275 4VH

1st version kW : 202.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.30...10.70
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del. quantity cm3/ : 17.9...18.1

100 s: (17.6...18.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del. quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1110

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del. quantity : 179.0...181.0

1000 : (176.0...184.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 11.00
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.00...12.10
2nd speed rpm : 600
Rack travel in m: 12.60...12.70
3rd speed rpm : 700
Rack travel in m: 12.50...12.70
4th speed rpm : 500
Rack travel in m: 0.00...12.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.50...9.90
2nd pressure hPa : 215
Rack travel in m: 10.30...10.40
3rd pressure hPa : 360
Rack travel in m: 11.50...11.90

A15

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 209.0...215.0
1000 s: (206.0...218.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 144.0...148.0
1000 s: (142.0...150.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...200.0
1000 s: (150.0...210.0)
Rack travel in mm : 9.50...9.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a3
 Edition : 07.01.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 816
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...875PA848-3K
 Governor no. : 0 421 815 171

Customer-spec. information
 Customer : MACK

Engine : EM6-250L 4VH

1st version kW : 186.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar : 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 10.80...10.90

Del. quantity cm³/ : 16.0...16.2

100 s : (15.7...16.5)

Spread cm³ : 0.5

100 s : (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del. quantity cm³/ : 3.9...4.5

100 s : (3.7...4.7)

Spread cm³ : 0.8

100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h : 1200

Del. quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 9.80

Speed rpm : 925...935

2nd rack travel in: 4.00

Speed rpm : 1010...1040

4th rack travel in: 1100

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 9...17

Testing:

Speed rpm : 275

Minimum rack travel: 6.00

Speed rpm : 325

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 10.80...10.90

2nd speed rpm : 510

Rack travel in m: 13.00...13.20

3rd speed rpm : 600

Rack travel in m: 12.40...12.60

4th speed rpm : 700

Rack travel in m: 11.70...11.90

5th speed rpm : 550

Rack travel in m: 0.00...13.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 510

Pressure hPa : 1200

Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 510

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 215

Rack travel in m: 10.30...10.40

A17

3rd pressure hPa : 435
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510

Del.quantity cm³/ : 237.0...243.0

1000 s: (234.0...246.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400

Del.quantity cm³/ : 146.0...150.0

1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 165.0...205.0

1000 s: (155.0...215.0)

Rack travel in mm : 9.20...9.40

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.50...4.70

Del.quantity cm³/ : 39.0...45.0

1000 s: (37.0...47.0)

Spread cm³ : 8.00

1000 s: (12.00)

Remarks:

:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a4
 Edition : 12.11.87
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 817
 Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA848-4K
 Governor no. : 0 421 815 173

Customer-spec. information
 Customer : MACK

Engine : EC6-350 4VH

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.60...14.70

Del. quantity cm3/ : 23.8...24.0

100 s: (23.5...24.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.1

Del. quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 3.10...3.30

3rd speed rpm : 850
 travel mm : 5.90...6.10

4th speed rpm : 1000
 travel mm : 7.50...7.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 63...65

Speed rpm : 1130

Rack travel in mm : 6.50...8.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del. quantity : 238.0...240.0

1000 : (235.0...243.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 53...61

Testing:
1st rack travel in: 13.60
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.60
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 14.60...14.70
2nd speed rpm : 625
Rack travel in m: 15.10...15.20
3rd speed rpm : 800
Rack travel in m: 14.80...14.90
4th speed rpm : 500
Rack travel in m: 0.00...14.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 15.10...15.20

Measurement
Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 280
Rack travel in m: 10.40...10.50
3rd pressure hPa : 650
Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del. quantity cm³/ : 262.0...268.0
1000 s: (259.0...271.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del. quantity cm³/ : 130.5...134.5
1000 s: (128.5...136.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.60
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 150.0...190.0
1000 s: (140.0...200.0)
Rack travel in mm : 8.90...9.10

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del. quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a5
 Edition : 12.11.87
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 818
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...875PA848-SK
 Governor no. : 0 421 815 174

Customer-spec. information
 Customer : MACK

Engine : EM6-275L 4VH

1st version kW : 202.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

 Rack travel in mm : 12.20...12.30

 Del.quantity cm3/ : 18.7...18.9

 100 s: (18.4...19.2)

 Spread cm3 : 0.5

 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.6...4.8
 Del.quantity cm3/ : 3.7...4.3
 100 s: (3.5...4.5)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 2.80...3.10
 3rd speed rpm : 850
 travel mm : 6.20...6.40
 4th speed rpm : 1000
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 63...65
 Speed rpm : 1085
 Rack travel in mm : 8.00...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200
 Del.quantity : 187.0...189.0
 1000 : (184.0...192.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 11.20
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 1030...1060
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17

Testing:
Speed rpm : 275
Minimum rack travel: 6.20
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 12.20...12.30
2nd speed rpm : 510
Rack travel in m: 14.10...14.30
3rd speed rpm : 700
Rack travel in m: 13.20...13.40
4th speed rpm : 400
Rack travel in m: 0.00...13.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.50...8.70
2nd pressure hPa : 330
Rack travel in m: 9.90...10.00
3rd pressure hPa : 685
Rack travel in m: 12.50...12.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm³/ : 260.0...266.0
 1000 s: (257.0...269.0)
Spread cm³ : 8.00
 1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 131.0...135.0
 1000 s: (129.0...137.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...180.0
 1000 s: (130.0...190.0)
Rack travel in mm : 8.50...8.70

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm³/ : 37.0...43.0
 1000 s: (35.0...45.0)
Spread cm³ : 8.00
 1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a6
Edition : 07.01.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 746 819
Injection pump
Pump designation : PES6P120A72ORS7135
EP type number : 0 412 726 807
Governor
Governor design. : RQV325...87SPA848-6K
Governor no. : 0 421 815 175

Customer-spec. information
Customer : MACK

Engine : EM6-225L 4VH

1st version kW : 165.0
Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
Rack travel in mm : 10.50...10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.00...11.10

Del. quantity cm3/ : 15.6...15.8

100 s : (15.3...16.1)

Spread cm3 : 0.5

100 s : (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.6...4.8
Del. quantity cm3/ : 3.8...4.4
100 s : (3.6...4.6)

Spread cm3 : 0.8
100 s : (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40
2nd speed rpm : 450
travel mm : 2.80...3.10
3rd speed rpm : 850
travel mm : 6.20...6.40
4th speed rpm : 1000
travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1110
Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 875
Aneroid pressure h: 900
Del. quantity : 156.0...158.0
1000 : (153.0...161.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 10.00
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 1015...1045
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17

Testing:
Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.00...11.10
2nd speed rpm : 510
Rack travel in m: 13.20...13.40
3rd speed rpm : 600
Rack travel in m: 12.50...12.70
4th speed rpm : 700
Rack travel in m: 11.80...12.00
5th speed rpm : 350
Rack travel in m: 0.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 900
Rack travel mm : 13.20...13.40

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.50...8.90
2nd pressure hPa : 220
Rack travel in m: 9.70...9.80

A23

3rd pressure hPa : 500
Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 510
Del.quantity cm3/ : 232.0...238.0
1000 s: (229.0...241.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 131.0...135.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...175.0
1000 s: (125.0...185.0)
Rack travel in mm : 8.50...8.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 38.0...44.0
1000 s: (36.0...46.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b5
Edition : 15.04.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 746 820

Injection pump
Pump designation : PES6P120A72ORS7135
EP type number : 0 412 726 807
Governor
Governor design. : RQV325...850PA878K
Governor no. : 0 421 815 177

Customer-spec. information
Customer : MACK

Engine : E6-275 4VH

1st version kW : 202.0
Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
Rack travel in mm : 10.30...10.70
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del. quantity cm3/ : 17.9...18.1

100 s : (17.6...18.4)

Spread cm3 : 0.5

100 s : (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.5...4.7
Del. quantity cm3/ : 3.2...3.8
100 s : (3.0...4.0)
Spread cm3 : 0.8
100 s : (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40
2nd speed rpm : 450
travel mm : 2.80...3.10
3rd speed rpm : 850
travel mm : 6.20...6.40
4th speed rpm : 1000
travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1110
Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h : 900
Del. quantity : 179.0...181.0
1000 : (176.0...184.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
 position degrees: 52...60

Testing:
1st rack travel in: 11.00
 Speed rpm : 900...910
2nd rack travel in: 4.00
 Speed rpm : 1025...1055
4th rack travel in: 1150
 Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
 position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack trave: 6.00
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 850
 Rack travel in m: 12.00...12.10
2nd speed rpm : 600
 Rack travel in m: 12.60...12.70
3rd speed rpm : 700
 Rack travel in m: 12.50...12.70
4th speed rpm : 500
 Rack travel in m: 0.00...12.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 600

1st pressure hPa : -
 Rack travel in m: 9.50...9.90
2nd pressure hPa : 215
 Rack travel in m: 10.30...10.40
3rd pressure hPa : 360
 Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 209.0...215.0
 1000 s: (206.0...218.0)
Spread cm³ : 8.00
 1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 144.0...148.0
 1000 s: (142.0...150.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...200.0
 1000 s: (150.0...210.0)
Rack travel in mm : 9.50...9.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 32.0...38.0
 1000 s: (30.0...40.0)
Spread cm³ : 8.00
 1000 s: (12.00)

Remarks:
 :

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b
 Edition : 08.04.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 821
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...850PA878-1K
 Governor no. : 0 421 815 178

Customer-spec. information
 Customer : MACK

Engine : E6-300 4VH

1st version kW : 224.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.30...10.70
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

 Rack travel in mm : 12.90...13.00

 Del.quantity cm3/ : 20.0...20.2

 100 s: (19.7...20.5)

 Spread cm3 : 0.5

 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.5...4.7
 Del.quantity cm3/ : 3.2...3.8
 100 s: (3.0...4.0)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 2.80...3.10
 3rd speed rpm : 850
 travel mm : 6.20...6.40
 4th speed rpm : 1000
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1100
 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 900
 Del.quantity : 200.5...202.5
 1000 : (197.5...205.5)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 11.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.90...13.00
2nd speed rpm : 700
Rack travel in m: 13.30...13.50
3rd speed rpm : 600
Rack travel in m: 13.50...13.70
4th speed rpm : 500
Rack travel in m: 0.00...13.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.50...13.70

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.40...9.80
2nd pressure hPa : 280
Rack travel in m: 10.40...10.50
3rd pressure hPa : 510
Rack travel in m: 12.20...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 217.0...223.0
 1000 s: (214.0...226.0)
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 233.0...239.0
 1000 s: (230.0...242.0)
Spread cm³ : 8.00
 1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 147.0...151.0
 1000 s: (145.0...153.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...210.0
 1000 s: (160.0...220.0)
Rack travel in mm : 9.40...9.80

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 32.0...38.0
 1000 s: (30.0...40.0)
Spread cm³ : 8.00
 1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b1
 Edition : 08.04.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 822
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA878-2K
 Governor no. : 0 421 815 179

Customer-spec. information
 Customer : MACK

Engine : E6-350 4VH

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.0...4.2

Del.quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.10...3.30

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.50...7.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 233.0...235.0

1000 : (230.0...238.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:
1st rack travel in: 12.90
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 5.50
Speed rpm : 325
Rack travel in mm : 4.00...4.20

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.90...14.00
2nd speed rpm : 625
Rack travel in m: 14.10...14.20
3rd speed rpm : 800
Rack travel in m: 14.00...14.10
4th speed rpm : 500
Rack travel in m: 0.00...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 625
Pressure hPa : 900
Rack travel mm : 14.10...14.20

Measurement
Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 275
Rack travel in m: 10.00...10.10
3rd pressure hPa : 570
Rack travel in m: 12.30...12.70

B01

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 625
Del.quantity cm3/ : 254.0...260.0
1000 s: (251.0...263.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 136.0...140.0
1000 s: (134.0...142.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (130.0...190.0)
Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.00...4.20
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b2
 Edition : 02.11.87
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 823
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...87SPA878-3K
 Governor no. : 0 421 815 180

Customer-spec. information
 Customer : MACK

Engine : EM6-275L 4VH

1st version kW : 202.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

 Rack travel in mm : 12.20...12.30

 Del. quantity cm3/ : 18.7...18.9

 100 s: (18.4...19.2)

 Spread cm3 : 0.5

 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.6...4.8
 Del. quantity cm3/ : 3.7...4.3
 100 s: (3.5...4.5)
 Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.30...1.50
 2nd speed rpm : 450
 travel mm : 2.60...2.90
 3rd speed rpm : 600
 travel mm : 3.80...4.00
 4th speed rpm : 850
 travel mm : 6.50...6.70
 5th speed rpm : 1000
 travel mm : 8.70...8.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 65
 Speed rpm : 1030
 Rack travel in mm : 8.00...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200

Del.quantity : 187.0...189.0
1000 : (184.0...192.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:

1st rack travel in: 11.20
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 985...1015
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 9...17

Testing:

Speed rpm : 275
Minimum rack travel: 6.20
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 875
Rack travel in m: 12.20...12.30
2nd speed rpm : 510
Rack travel in m: 14.20...14.30
3rd speed rpm : 700
Rack travel in m: 13.20...13.30
4th speed rpm : 550
Rack travel in m: 0.00...14.30

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 14.20...14.30

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 330
Rack travel in m: 10.20...10.30

3rd pressure hPa : 685
Rack travel in m: 12.80...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 260.0...266.0
1000 s: (257.0...269.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 131.0...135.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (130.0...190.0)
Rack travel in mm : 8.80...9.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 37.0...43.0
1000 s: (35.0...45.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b3
 Edition : 07.01.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 824
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...87SPA878-4K
 Governor no. : 0 421 815 181

Customer-spec. information
 Customer : MACK

Engine : EM6-22SL 4VH

1st version kW : 165.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.00...11.10

Del. quantity cm3/ : 15.6...15.8

100 s: (15.3...16.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del. quantity cm3/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 900

Del. quantity : 156.0...158.0

1000 : (153.0...161.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 10.00
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 1015...1045
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17

Testing:
Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.00...11.10
2nd speed rpm : 510
Rack travel in m: 13.20...13.40
3rd speed rpm : 600
Rack travel in m: 12.50...12.70
4th speed rpm : 700
Rack travel in m: 11.80...12.00
5th speed rpm : 350
Rack travel in m: 0.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 900
Rack travel mm : 13.20...13.40

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.50...8.90
2nd pressure hPa : 220
Rack travel in m: 9.70...9.80

B05

3rd pressure hPa : 500
Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 510
Del.quantity cm³/ : 232.0...238.0
1000 s: (229.0...241.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 131.0...135.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (125.0...185.0)
Rack travel in mm : 8.50...8.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm³/ : 38.0...44.0
1000 s: (36.0...46.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b4
 Edition : 07.01.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 826
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...875PA878-6K
 Governor no. : 0 421 815 183

Customer-spec. information
 Customer : MACK

Engine : EM6-250L 4VH

1st version kW : 186.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 16.0...16.2

100 s: (15.7...16.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 160.0...162.0

1000 : (157.0...165.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 9.80

Speed rpm : 925...935

2nd rack travel in: 4.00

Speed rpm : 1010...1040

4th rack travel in: 1100

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 9...17

Testing:

Speed rpm : 275

Minimum rack travel: 1.50

Speed rpm : 325

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 10.80...10.90

2nd speed rpm : 510

Rack travel in m: 13.00...13.20

3rd speed rpm : 600

Rack travel in m: 12.40...12.60

4th speed rpm : 700

Rack travel in m: 11.70...11.90

5th speed rpm : 550

Rack travel in m: 0.00...13.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 510

Pressure hPa : 1200

Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 510

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 215

Rack travel in m: 10.30...10.40

B07

3rd pressure hPa : 435

Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510

Del.quantity cm3/ : 237.0...243.0

1000 s: (234.0...246.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400

Del.quantity cm3/ : 146.0...150.0

1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 165.0...205.0

1000 s: (155.0...215.0)

Rack travel in mm : 9.20...9.40

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.50...4.70

Del.quantity cm3/ : 39.0...45.0

1000 s: (37.0...47.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a7
 Edition : 07.01.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 829
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325..1050PA848-8K
 Governor no. : 0 421 815 185

Customer-spec. information
 Customer : MACK

Engine : E6-270 4VH

1st version kW : 201.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 17.4...17.6

100 s: (17.1...17.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.40...1.60

2nd speed rpm : 450
 travel mm : 2.50...2.80

3rd speed rpm : 800
 travel mm : 4.80...5.00

4th speed rpm : 1050
 travel mm : 7.30...7.60

5th speed rpm : 1200
 travel mm : 9.40...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1210

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del. quantity : 174.0...176.0
1000 : (171.0...179.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:
1st rack travel in: 11.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 275
Minimum rack travel: 1.50
Speed rpm : 325
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION
Speed rpm : 325...600

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.20...12.30
2nd speed rpm : 630
Rack travel in m: 12.00...12.10
3rd speed rpm : 925
Rack travel in m: 11.90...12.10
4th speed rpm : 800
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 630
Pressure hPa : 900
Rack travel mm : 12.00...12.10

Measurement
Speed 1/min : 630

1st pressure hPa : -
Rack travel in m: 8.80...9.00
2nd pressure hPa : 270
Rack travel in m: 9.60...9.70

B09

3rd pressure hPa : 400
Rack travel in m: 11.00...11.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 630
Del. quantity cm3/ : 188.0...194.0
1000 s: (185.0...197.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del. quantity cm3/ : 129.0...133.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 135.0...175.0
1000 s: (125.0...185.0)
Rack travel in mm : 8.80...9.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.00
Del. quantity cm3/ : 38.0...44.0
1000 s: (36.0...46.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Note remarks

Combination no. : 0 402 746 830

Customer-spec. information
Customer : DAIMLER-BENZ

```
1st version kW      : 206.0
Rated speed         : 2200
```

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

Test pressure, bar: 25...27

```
Prestroke mm      : 5.20...5.30
                  : (5.15...5.35)
Rack travel in mm : 9.00...12.00
Firing order      : 6- 2- 4- 1- 5- 3
```

Phasing : 0-60-120-180-240-300

Tolerance \pm ⁰ : 0.50 (0.75)

Time to cyl. no. : 6

1st speed rpm : 1080

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 19.7...19.9

100 s: (19.4...20.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.5

Del. quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
with governor

```
1st speed      rpm      : 350
travel mm      : 2.20...2.40
```

```
2nd speed      rpm      : 580
travel mm      : 3.80...4.20
```

```
3rd speed      rpm      : 1150
  travel mm    : 8.00...8.50
```

```
4th speed      rpm      : 1230
travel mm      : 9.20...9.80
```

Control-lever position

```

Speed      rpm      : 1160
Rack travel in mm : 15.20...17.80

```

FULL LOAD DELIV. AT FULL LOAD STOP

```
1st version
Speed      rpm   : 1080
```

Aneroid pressure h: 750
Del. quantity : 197.0...199.0
1000 : (194.0...202.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:

1st rack travel in: 12.40
Speed rpm : 1120...1130
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 11...19

Testing:

Speed rpm : 250
Minimum rack travel: 7.50
Speed rpm : 350
Rack travel in mm : 5.20...5.50

CONSTANT REGULATION

Speed rpm : 350...550

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.70...11.00

Measurement

Speed 1/min : 500

1st pressure hPa : 230
Rack travel in m: 11.00...11.20
2nd pressure hPa : 370
Rack travel in m: 12.40...12.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750

Speed rpm : 600
Del. quantity cm3/ : 196.0...200.0
1000 s: (193.0...203.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del. quantity cm3/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40
Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 150.0...170.0
1000 s: (146.0...174.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a8
 Edition : 06.04.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 832
 Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA848-10
 K
 Governor no. : 0 421 815 189

Customer-spec. information
 Customer : MACK

Engine : EM6 275 2VH

1st version kW : 202.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.30...10.70
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.30...12.40

Del. quantity cm3/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del. quantity cm3/ : 3.7...4.3

100 s: (3.5...4.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.10...3.30

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.50...7.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 187.0...189.0
1000 : (184.0...192.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:

1st rack travel in: 11.30
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1055...1085
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 9...17

Testing:

Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 325...480

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900
Rack travel in m: 12.30...12.40
2nd speed rpm : 540
Rack travel in m: 13.50...13.70
3rd speed rpm : 700
Rack travel in m: 12.70...12.90
4th speed rpm : 450
Rack travel in m: 0.00...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 540
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 540

1st pressure hPa : -
Rack travel in m: 9.10...9.20
2nd pressure hPa : 320
Rack travel in m: 10.20...10.30

3rd pressure hPa : 550
Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 540
Del.quantity cm³/ : 235.0...241.0
1000 s: (232.0...244.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 142.0...146.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 150.0...190.0
1000 s: (140.0...200.0)
Rack travel in mm : 9.10...9.30

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm³/ : 37.0...43.0
1000 s: (35.0...45.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a9
 Edition : 07.03.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 833
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...975PA848-11
 K
 Governor no. : 0 421 815 190

Customer-spec. information
 Customer : MACK

Engine : E6-350 2VH

1st version kW : 257.0
 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.30...10.70
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm3/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.40...1.60

2nd speed rpm : 450

travel mm : 2.50...2.80

3rd speed rpm : 800

travel mm : 4.80...5.00

4th speed rpm : 1050

travel mm : 7.30...7.60

5th speed rpm : 1200

travel mm : 9.40...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1190

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h: 900
Del. quantity : 234.0...236.0
1000 : (231.0...239.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:

1st rack travel in: 13.10
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...600

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 975
Rack travel in m: 14.10...14.20
2nd speed rpm : 700
Rack travel in m: 13.80...13.90
3rd speed rpm : 600
Rack travel in m: 0.00...13.30

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 700
Pressure hPa : 900
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 700

1st pressure hPa : -
Rack travel in m: 7.80...8.00
2nd pressure hPa : 240
Rack travel in m: 9.30...9.40
3rd pressure hPa : 510

B15

Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del. quantity cm3/ : 230.0...236.0
1000 s: (227.0...239.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del. quantity cm3/ : 125.0...129.0
1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 110.0...150.0
1000 s: (100.0...160.0)
Rack travel in mm : 7.80...8.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del. quantity cm3/ : 38.0...44.0
1000 s: (36.0...46.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D 2
 Edition : 20.05.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 436 103
 Injection pump
 Pump designation : PES6MW100/120RS1143
 EP type number : 0 413 406 137
 Governor
 Governor design. : RQV350...1100MW82
 Governor no. : 0 420 083 130

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA-830

1st version kW : 186.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15
 : (3.00...3.20)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del. quantity cm3/ : 15.0...15.2

100 s: (14.8...15.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.2...7.3

Del. quantity cm3/ : 1.6...2.0

100 s: (1.4...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1240

travel mm : 8.80...9.20

2nd speed rpm : 1140

travel mm : 7.80...8.00

3rd speed rpm : 700

travel mm : 3.80...4.40

4th speed rpm : 350

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del. quantity : 150.0...152.0

1000 : (148.0...154.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 44...52

Testing:
1st rack travel in: 11.70
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1330
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.2

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 350
Rack travel in mm : 7.20...7.30

CONSTANT REGULATION
Speed rpm : 360...500

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.70...12.80
2nd speed rpm : 700
Rack travel in m: 13.40...13.50
3rd speed rpm : 900
Rack travel in m: 12.90...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.90...10.10

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 520
Rack travel in m: 12.20...12.50
3rd pressure hPa : 900
Rack travel in m: 13.60...13.70

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 159.0...161.0
1000 s: (157.0...163.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 88.0...90.0
1000 s: (86.0...92.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 205.0...225.0
1000 s: (202.0...228.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.20...7.30
Del.quantity cm³/ : 16.0...20.0
1000 s: (14.0...22.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Start-of-delivery mark/lock = 8.0°
angular displacement of the cam after
start of delivery of cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 A 14
 Edition : 19.05.88
 Replaces : 25.08.87
 Test oil : ISO-4113

Combination no. : 0 403 444 110

Injection pump
 Pump designation : PES4MW100/72ORS1127
 EP type number : 0 413 404 103
 Governor
 Governor design. : RQV300...1300MW48-1
 Governor no. : 0 420 083 084

Customer-spec. information
 Customer : DB

Engine : OM 364 A

1st version kW : 85.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del. quantity cm³/ : 8.0...8.2

100 s: (7.8...8.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del. quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450
 travel mm : 9.50...9.90

2nd speed rpm : 1350
 travel mm : 8.50...8.70

3rd speed rpm : 450
 travel mm : 2.40...3.00

4th speed rpm : 300
 travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 80.0...82.0

1000 : (78.0...84.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 50...58

Testing:
1st rack travel in: 10.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.8

Testing:
Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 7.80...7.90

CONSTANT REGULATION
Speed rpm : 330...600

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 11.10...11.20
2nd speed rpm : 750
Rack travel in m: 11.90...12.10
3rd speed rpm : 585
Rack travel in m: 12.10...12.30
4th speed rpm : 1000
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del.quantity cm3/ : 76.0...78.0
1000 s: (74.0...80.0)
Spread cm3 : 5.00
1000 s: (7.0)
Speed rpm : 585
Del.quantity cm3/ : 71.5...74.5
1000 s: (69.0...77.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...7.90
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 A 19
Edition : 13.06.88
Replaces : 25.08.87
Test oil : ISO-4113

Combination no. : 0 403 444 112

Injection pump
Pump designation : PES4MW100/720RS1127
EP type number : 0 413 404 103
Governor
Governor design. : RQV300...1300MW48-2
Governor no. : 0 420 083 110

Customer-spec. information
Customer : DB

Engine : OM 364 A

1st version kW : 85.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

B20

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del. quantity cm³/ : 8.0...8.2

100 s: (7.8...8.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del. quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 80.0...82.0

1000 : (78.0...84.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 50...58

Testing:

1st rack travel in: 10.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.8

Testing:

Speed rpm : 100
Minimum rack travel: 9.50
Speed rpm : 300
Rack travel in mm : 7.80...7.90

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300
Rack travel in m: 11.10...11.20
2nd speed rpm : 750
Rack travel in m: 11.80...12.10
3rd speed rpm : 585
Rack travel in m: 12.10...12.30
4th speed rpm : 1000
Rack travel in m: 11.10...11.30

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del. quantity cm³/ : 76.0...78.0
1000 s: (74.0...80.0)
Spread cm³ : 5.00
1000 s: (7.0)
Speed rpm : 585
Del. quantity cm³/ : 71.5...74.5
1000 s: (69.0...77.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...7.90
Del. quantity cm³/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 A 25
Edition : 08.06.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 403 444 115

Injection pump
Pump designation : PES4MW100/72ORS1127
EP type number : 0 413 404 103
Governor
Governor design. : RQV300...1200MW48-6
Governor no. : 0 420 083 157

Customer-spec. information
Customer : DB

Engine : OM364A

1st version kW : 77.0
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.2...8.4

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1325

travel mm : 9.40...9.80

2nd speed rpm : 1250

travel mm : 8.60...8.80

3rd speed rpm : 550

travel mm : 3.00...3.60

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 75.0...77.0

1000 : (73.0...79.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 48...56

Testing:
1st rack travel in: 10.00
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.3

Testing:
Speed rpm : 100
Minimum rack trave: 9.70
Speed rpm : 300
Rack travel in mm : 8.20...8.40

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 11.00...11.10
2nd speed rpm : 600
Rack travel in m: 12.00...12.20
3rd speed rpm : 800
Rack travel in m: 11.60...11.80
4th speed rpm : 900
Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 600
Del.quantity cm3/ : 65.0...68.0
1000 s: (62.5...70.5)
Spread cm3 : 5.00
1000 s: (7.0)
Speed rpm : 800
Del.quantity cm3/ : 70.0...73.0
1000 s: (67.5...75.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1240...1250

B23

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.20...8.40
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 A 12
Edition : 19.05.88
Replaces : 20.08.87
Test oil : ISO-4113

Combination no. : 0 403 446 124

Injection pump
Pump designation : PES6MW100/72ORS1101
EP type number : 0 413 406 102
Governor
Governor design. : RQV300...1300MW34
Governor no. : 0 420 083 032

Customer-spec. information
Customer : DB

Engine : OM362LA

1st version kW : 141.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00

B24

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 9.8...10.0

100 s : (9.6...10.2)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.1

Del. quantity cm³/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1475

travel mm : 8.60...9.00

2nd speed rpm : 1340

travel mm : 7.50...7.70

3rd speed rpm : 500

travel mm : 2.60...3.20

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h : 700

Del. quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel in: 10.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1460...1490
4th rack travel in: 1600
Speed rpm : 0.10...1.00

LOW IDLE 1
Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:
Speed rpm : 100
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 6.00...6.10
Rack travel in mm : 2.00
Speed rpm : 460...520

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.30

Measurement
Speed 1/min : 500

1st pressure hPa : 100
Rack travel in m: 10.60...10.70
2nd pressure hPa : 125
Rack travel in m: 11.10...11.30
3rd pressure hPa : 700
Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm³/ : 87.5...90.5
1000 s: (85.0...93.0)

Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 50.0...52.0
1000 s: (48.0...54.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.10
Del.quantity cm³/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 A 11
 Edition : 13.06.88
 Replaces : 20.08.87
 Test oil : ISO-4113
 Combination no. : 0 403 446 134
 Injection pump
 Pump designation : PES6MW100/72ORS1101
 EP type number : 0 413 406 102
 Governor
 Governor design. : RQV300...1300MW44
 Governor no. : 0 420 083 053

Customer-spec. information
 Customer : DB

Engine : OM362LA

1st version kW : 141.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.1

Del. quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 10.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1435...1465
4th rack travel in: 1600
Speed rpm : 0.10...1.00

LOW IDLE 1
Control lever
position degrees: 7...15
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:
Speed rpm : 100
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 6.00...6.10
Rack travel in mm : 2.00
Speed rpm : 520...580

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.00...10.10

Measurement
Speed 1/min : 500

1st pressure hPa : 100
Rack travel in m: 10.40...10.50
2nd pressure hPa : 125
Rack travel in m: 10.90...11.10
3rd pressure hPa : 700
Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm3/ : 87.5...90.5
1000 s: (85.0...93.0)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 47.5...49.5
1000 s: (45.5...51.5)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.10
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 8,7 0
Edition : 13.06.88
Replaces : 20.08.87
Test oil : ISO-4113

Combination no. : 0 403 446 143

Injection pump
Pump designation : PES6MW100/72ORS1101
EP type number : 0 413 406 102
Governor
Governor design. : RQV300...1300MW44-1
Governor no. : 0 420 083 064

Customer-spec. information
Customer : DB

Engine : OM362LA

1st version kW : 141.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.20...3.30
: (3.15...3.35)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 9.8...10.0

100 s : (9.6...10.2)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.1

Del. quantity cm³/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h : 700

Del. quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 10.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1435...1465
4th rack travel in: 1600
Speed rpm : 0.10...1.00

LOW IDLE 1
Control lever
position degrees: 7...15
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:
Speed rpm : 100
Minimum rack trave: 7.60
Speed rpm : 300
Rack travel in mm : 6.00...6.10
Rack travel in mm : 2.00
Speed rpm : 520...580

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.20...10.30

Measurement
Speed 1/min : 500

1st pressure hPa : 100
Rack travel in m: 10.60...10.70
2nd pressure hPa : 125
Rack travel in m: 11.10...11.30
3rd pressure hPa : 700
Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm3/ : 87.5...90.5
1000 s: (85.0...93.0)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 50.0...52.0
1000 s: (48.0...54.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.10
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Set intermediate-speed stop (ZDA) to
contact at 1300 1/min, then turn back
1/2 turn.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 11
 Edition : 24.06.88
 Replaces : 11.85
 Test oil : ISO-4113
 Combination no. : 0 403 446 145
 Injection pump
 Pump designation : PES6MW100/72ORS1114
 EP type number : 0 413 406 111
 Governor
 Governor design. : RQV300...1300MW48
 Governor no. : 0 420 083 066

Customer-spec. information
 Customer : DB

Engine : OM366A

1st version kW : 125.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

CO2

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 7.7...7.9

100 s : (7.5...8.1)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del. quantity cm³/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 48...56

Testing:
1st rack travel in: 10.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1430...1460
4th rack travel in: 1520
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.8

Testing:
Speed rpm : 100
Minimum rack travel: 9.40
Speed rpm : 300
Rack travel in mm : 7.80...7.90
Rack travel in mm : 2.00
Speed rpm : 500...560

CONSTANT REGULATION
Speed rpm : 330...600

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 11.00...11.10
2nd speed rpm : 700
Rack travel in m: 12.10...12.20
3rd speed rpm : 720
Rack travel in m: 12.10...12.20
4th speed rpm : 800
Rack travel in m: 11.80...12.00
5th speed rpm : 900
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del. quantity cm³/ : 74.5...77.5
1000 s: (72.0...80.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

C03

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...7.90
Del. quantity cm³/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 4
Edition : 13.06.88
Replaces : 11.85
Test oil : ISO-4113

Combination no. : 0 403 446 147

Injection pump
Pump designation : PES6MW100/72ORS1115
EP type number : 0 413 406 110
Governor
Governor design. : RQV300...1300MW50
Governor no. : 0 420 083 071

Customer-spec. information
Customer : DB

Engine : OM366LA

1st version kW : 148.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30
: (3.15...3.35)
Rack travel in mm : 9.00...12.00

C04

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.7

Del. quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 10.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1435...1465
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 100
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 5.60...5.70

CONSTANT REGULATION
Speed rpm : 370...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 180
Rack travel mm : 10.80...10.90

Measurement
Speed 1/min : 500

1st pressure hPa : 700
Rack travel in m: 11.90...12.00
2nd pressure hPa : -
Rack travel in m: 10.10...10.20
3rd pressure hPa : 210
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm³/ : 82.0...85.0
1000 s: (79.5...87.5)

C05

Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 53.0...55.0
1000 s: (51.0...57.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.60...5.70
Del.quantity cm³/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 17
 Edition : 13.06.88
 Replaces : 24.07.87
 Test oil : ISO-4113

Combination no. : 0 403 446 150

Injection pump
 Pump designation : PES6MW100/72ORS1120
 EP type number : 0 413 406 112
 Governor
 Governor design. : RQV300...1300MW59
 Governor no. : 0 420 083 077

Customer-spec. information
 Customer : DB

Engine : OM366LA

1st version kW : 141.7
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.00...12.10

Del. quantity cm³/ : 8.6...8.8

100 s : (8.4...9.0)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.2

Del. quantity cm³/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h : 700

Del. quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 11.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1450...1480
4th rack travel in: 1530
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.1

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.10...6.20

CONSTANT REGULATION
Speed rpm : 320...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 260
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : 700
Rack travel in m: 12.00...12.10
2nd pressure hPa : -
Rack travel in m: 10.80...10.90
3rd pressure hPa : 310
Rack travel in m: 11.80...12.10

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 75.5...78.5
1000 s: (73.0...81.0)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 47.0...49.0
1000 s: (45.0...51.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.10...6.20
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 3
Edition : 16.06.88
Replaces : 12.09.86
Test oil : ISO-4113

Combination no. : 0 403 446 155

Injection pump
Pump designation : PES6MM100/72ORS1115
EP type number : 0 413 406 110
Governor
Governor design. : RQV300...1300MW62
Governor no. : 0 420 083 085

Customer-spec. information
Customer : DB

Engine : OM366LA

1st version kW : 148.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30
: (3.15...3.35)
Rack travel in mm : 9.00...12.00

C08

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 9.7...9.9

100 s : (9.5...10.1)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.7

Del. quantity cm³/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del. quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 10.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1435...1465
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:
Speed rpm : 100
Minimum rack travel: 7.20
Speed rpm : 300
Rack travel in mm : 5.60...5.70

CONSTANT REGULATION
Speed rpm : 370...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.90...12.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.40...10.50
2nd pressure hPa : 180
Rack travel in m: 10.80...10.90
3rd pressure hPa : 210
Rack travel in m: 11.60...11.90

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 82.5...85.5
1000 s: (80.0...88.0)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 57.0...59.0
1000 s: (55.0...61.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.60...5.70
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Set intermediate-speed stop (ZDA) to
contact at 1300 1/min, then turn back
1/2 turn.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 47
 Edition : 13.06.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 156
 Injection pump
 Pump designation : PES6MW100/72ORS1120
 EP type number : 0 413 406 112
 Governor
 Governor design. : RQV300...1300MW59
 Governor no. : 0 420 083 077

Customer-spec. information
 Customer : DB

Engine : OM366LA

1st version kW : 141.7
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.10...12.20

Del. quantity cm³/ : 8.6...8.8

100 s : (8.4...9.0)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.1

Del. quantity cm³/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 8.50...8.70

3rd speed rpm : 450

travel mm : 2.40...3.00

4th speed rpm : 300

travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1340

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h : 700

Del. quantity : 86.0...88.0

1000 : (84.0...90.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 11.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1440...1470
4th rack travel in: 1530
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.00...6.10

CONSTANT REGULATION
Speed rpm : 320...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 260
Rack travel mm : 11.00...11.10

Measurement
Speed 1/min : 500

1st pressure hPa : 700
Rack travel in m: 12.00...12.10
2nd pressure hPa : -
Rack travel in m: 10.80...10.90
3rd pressure hPa : 310
Rack travel in m: 11.70...12.00

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 750
Del.quantity cm3/ : 75.5...78.5
1000 s: (73.0...81.0)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 47.0...49.0
1000 s: (45.0...51.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.00...6.10
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 14
 Edition : 30.05.88
 Replaces : 12.09.86
 Test oil : ISO-4113
 Combination no. : 0 403 446 169
 Injection pump
 Pump designation : PES6MW100/72ORS1131
 EP type number : 0 413 406 123
 Governor
 Governor design. : RQV300...1300MW68
 Governor no. : 0 420 083 101

Customer-spec. information
 Customer : DB

Engine : OM 366 LA

1st version kW : 150.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.90...12.00

Del.quantity cm³/ : 9.7...9.9

100 s : (9.5...10.1)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.0

Del.quantity cm³/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.40...8.60

2nd speed rpm : 1450

travel mm : 9.30...9.70

3rd speed rpm : 600

travel mm : 3.90...4.50

4th speed rpm : 300

travel mm : 0.80...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h : 700

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 10.90
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1440...1470
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:
Speed rpm : 100
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.90...6.00

CONSTANT REGULATION
Speed rpm : 350...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 170
Rack travel mm : 10.40...10.50

Measurement
Speed 1/min : 500

1st pressure hPa : 700
Rack travel in m: 11.90...12.00
2nd pressure hPa : -
Rack travel in m: 10.10...10.20
3rd pressure hPa : 225
Rack travel in m: 11.50...11.80

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 83.0...86.0
1000 s: (80.5...88.5)

Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 52.0...54.0
1000 s: (50.0...56.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.90...6.00
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 25
 Edition : 30.05.88
 Replaces : 13.05.87
 Test oil : ISO-4113
 Combination no. : 0 403 446 170
 Injection pump
 Pump designation : PES6MW100/72ORS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RQV300...1300MW69
 Governor no. : 0 420 083 102

Customer-spec. information
 Customer : DB

Engine : OM366A

1st version kW : 125.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 7.7...7.9

100 s : (7.5...8.1)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del. quantity cm³/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1340

travel mm : 8.40...8.60

2nd speed rpm : 1450

travel mm : 8.70...9.10

3rd speed rpm : 600

travel mm : 3.90...4.50

4th speed rpm : 300

travel mm : 0.80...1.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 50...58

Testing:
1st rack travel in: 10.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.8

Testing:
Speed rpm : 100
Minimum rack travel: 10.20
Speed rpm : 300
Rack travel in mm : 7.80...7.90

CONSTANT REGULATION
Speed rpm : 330...500

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in mm: 11.00...11.10
2nd speed rpm : 750
Rack travel in mm: 11.90...12.00
3rd speed rpm : 700
Rack travel in mm: 12.00...12.20
4th speed rpm : 1100
Rack travel in mm: 11.00...11.20

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del. quantity cm³/ : 70.5...73.5
1000 s: (68.0...76.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack travel: 10.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...7.90
Del. quantity cm³/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 27
 Edition : 19.05.88
 Replaces : 24.07.87
 Test oil : ISO-4113

Combination no. : 0 403 446 179

Injection pump
 Pump designation : PES6MW100/72ORS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RQV300...1300MW74
 Governor no. : 0 420 083 112

Customer-spec. information
 Customer : DB

Engine : OM366LA

1st version kW : 127.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 7.3...7.5

100 s : (7.1...7.7)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del. quantity cm³/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1340

travel mm : 8.50...8.70

2nd speed rpm : 1450

travel mm : 9.50...9.70

3rd speed rpm : 700

travel mm : 3.90...4.50

4th speed rpm : 300

travel mm : 1.30...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1335

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 73.0...75.0

1000 : (71.0...77.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 50...58

Testing:

1st rack travel in: 10.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.8

Testing:

Speed rpm : 100
Minimum rack travel: 9.70
Speed rpm : 300
Rack travel in mm : 7.80...7.90

CONSTANT REGULATION

Speed rpm : 330...600

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300
Rack travel in m: 11.00...11.10
2nd speed rpm : 750
Rack travel in m: 11.70...11.80
3rd speed rpm : 1125
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 68.0...70.0
1000 s: (66.0...72.0)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...7.90
Del.quantity cm³/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 N 7
 Edition : 08.06.88
 Replaces : 09.03.87
 Test oil : ISO-4113

Combination no. : 0 403 446 186

Injection pump
 Pump designation : PES6MW100/72ORS1133
 EP type number : 0 413 406 126
 Governor
 Governor design. : RQV325...1325MW79
 Governor no. : 0 420 083 123

Customer-spec. information
 Customer : KHD

Engine : BF 6L 913

1st version kW : 124.0
 Rated speed : 2650

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 10.50...10.60

Del. quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 6.8...6.9

Del. quantity cm³/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1375

travel mm : 8.70...8.90

2nd speed rpm : 1430

travel mm : 9.50...9.90

3rd speed rpm : 325

travel mm : 1.50...1.90

4th speed rpm : 600

travel mm : 2.70...3.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1325

Aneroid pressure h: 900

Del. quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 9.50
Speed rpm : 1370...1380
2nd rack travel in: 4.00
Speed rpm : 1445...1475
4th rack travel in: 1550
Speed rpm : 0.10...1.00

LOW IDLE 1
Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.8

Testing:
Speed rpm : 100
Minimum rack travel: 8.60
Speed rpm : 325
Rack travel in mm : 6.80...6.90

CONSTANT REGULATION
Speed rpm : 350...650

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 450
Rack travel mm : 10.20...10.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...10.00
2nd pressure hPa : 450
Rack travel in m: 10.20...10.00
3rd pressure hPa : 900
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 245 (255)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 850
Del. quantity cm3/ : 93.0...97.0
1000 s: (91.0...99.0)

Spread cm3 : 3.50
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm3/ : 57.0...59.0
1000 s: (55.0...61.0)

RACK STOP ADJUSTMENT

Speed rpm : 100

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1370...1380

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 325
Rack travel in mm : 6.80...6.90
Del. quantity cm3/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 28
Edition : 01.07.88
Replaces : 19.02.88
Test oil : ISO-4113

Combination no. : 0 403 446 188

Injection pump
Pump designation : PES6MW100/72ORS1144
EP type number : 0 413 406 138
Governor
Governor design. : RQV300...1300MW48-4
Governor no. : 0 420 083 126

Customer-spec. information
Customer : DB

Engine : OM366A

1st version kW : 100.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)
Rack travel in mm : 19.00...21.00

C20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.10...10.20

Del. quantity cm³/ : 6.4...6.6

100 s : (6.2...6.8)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.3...7.4

Del. quantity cm³/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1340

travel mm : 8.50...8.70

2nd speed rpm : 1450

travel mm : 9.30...9.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 64.0...66.0

1000 : (62.0...68.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 50...58

Testing:
1st rack travel in: 9.10
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1415...1445
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.3

Testing:
Speed rpm : 100
Minimum rack travel: 9.30
Speed rpm : 300
Rack travel in mm : 7.30...7.40

CONSTANT REGULATION
Speed rpm : 330...500

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 10.10...10.20
2nd speed rpm : 750
Rack travel in m: 11.10...11.20
3rd speed rpm : 600
Rack travel in m: 11.10...11.20
4th speed rpm : 900
Rack travel in m: 10.70...10.90

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 750
Del.quantity cm3/ : 61.5...64.5
1000 s: (59.0...67.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.10
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.30...7.40
Del.quantity cm3/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:
:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 R
 Edition : 13.06.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 446 202
 Injection pump
 Pump designation : PES6MW100/320RS1167
 EP type number : 0 413 406 151
 Governor
 Governor design. : RQV275...1250MW25-7
 Governor no. : 0 420 180 381

Customer-spec. information
 Customer : RVI

Engine : MIDR 06 02 12L

1st version kW : 122.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.95...3.05
 : (2.90...3.10)
 Rack travel in mm : 9.00...12.00

C22

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Del. quantity cm3/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 5.5...5.7

Del. quantity cm3/ : 2.3...2.7

100 s: (2.0...2.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.20...8.40

2nd speed rpm : 1450

travel mm : 8.90...9.30

3rd speed rpm : 275

travel mm : 1.00...1.40

4th speed rpm : 900

travel mm : 5.40...6.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1000

Del. quantity : 103.0...105.0

1000 : (101.0...107.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 8...16

Testing:

1st rack travel in: 11.60
Speed rpm : 1320...1330
2nd rack travel in: 4.0
Speed rpm : 1485...1515
4th rack travel in: 1650
Speed rpm : 1.00...0.00

LOW IDLE 1

Control lever
position degrees: 60...68
Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 7.0
Speed rpm : 275
Rack travel in mm : 7.10...6.90
Speed rpm : 200
Maximum rack travel: 7.40

CONSTANT REGULATION

Speed rpm : 370...440

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 160
Rack travel mm : 10.80...10.70

Measurement

Speed 1/min : 500

1st pressure hPa : 1000
Rack travel in mm: 12.50...12.60
2nd pressure hPa : -
Rack travel in mm: 10.20...10.10
3rd pressure hPa : 320
Rack travel in mm: 12.20...11.90

START CUT-OUT

Speed 1/min : 190 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 900
Del. quantity cm³/ : 101.0...105.0
1000 s: (99.0...107.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -

Speed rpm : 500
Del. quantity cm³/ : 52.0...54.0
1000 s: (50.0...56.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.60
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 100.0...110.0
1000 s: (97.0...113.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275
Rack travel in mm : 7.10...6.90
Del. quantity cm³/ : 23.0...27.0
1000 s: (20.5...29.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark 9.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 40
 Edition : 01.07.88
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 403 446 207

Injection pump
 Pump designation : PES6MW100/72ORS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RQ300/1300MW96
 Governor no. : 0 420 082 032

Customer-spec. information
 Customer : DB

Engine : OM366A

1st version kW : 125.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 7.9...8.1

100 s : (7.7...8.3)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.4...7.6

Del.quantity cm³/ : 1.0...1.4

100 s : (0.7...1.6)

Spread cm³ : 0.3

100 s : (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1425

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 7.80...8.00

3rd speed rpm : 525

travel mm : 4.90...5.50

4th speed rpm : 300

travel mm : 2.10...2.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1200

Rack travel in mm : 12.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 79.0...81.0

1000 : (77.0...83.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 34...42

Setting point:
Speed rpm : 1200
Rack travel in mm : 13.5

Testing:
1st rack travel in: 10.20
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.5

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.40...7.60

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 11.20...11.30
2nd speed rpm : 900
Rack travel in m: 11.90...12.10
3rd speed rpm : 600
Rack travel in m: 12.40...12.60

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 900
Del. quantity cm³/ : 77.0...80.0
1000 s: (74.5...82.5)
Spread cm³ : 5.00
1000 s: (7.0)
Speed rpm : 600
Del. quantity cm³/ : 70.0...73.0
1000 s: (67.5...75.5)
Spread cm³ : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

025

1mm rack travel less than

full load rack tr: 10.20
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 80.0...90.0
1000 s: (77.0...93.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.40...7.60
Del. quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 S
Edition : 13.06.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 446 208
Injection pump
Pump designation : PES6MW100/32ORS1171
EP type number : 0 413 406 156
Governor
Governor design. : RQV300...1400MW97
Governor no. : 0 420 083 158

Customer-spec. information
Customer : RVI

Engine : MIDS060212C

1st version kW : 97.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 058

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400

Del. quantity cm3/ : 7.3...7.5

100 s: (7.1...7.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del. quantity cm3/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1570

travel mm : 9.20...9.60

2nd speed rpm : 1450

travel mm : 8.30...8.50

3rd speed rpm : 500

travel mm : 3.00...3.40

4th speed rpm : 300

travel mm : 1.10...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 73.0...75.0

1000 : (71.0...77.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.80

Speed rpm : 1440...1450

2nd rack travel in: 4.00
Speed rpm : 1550...1580
4th rack travel in: 1680
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5

Testing:
Speed rpm : 100
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 6.60...6.40

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 900
Del.quantity cm3/ : 65.0...68.0
1000 s: (62.5...70.5)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...100.0
1000 s: (87.0...103.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.60...6.40
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Setting and blocking of pointer of
start-of-delivery sensor on cyl. 1
start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 A 23
 Edition : 01.07.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 474 003
 Injection pump
 Pump designation : PES4MW100/72ORS1127
 EP type number : 0 413 404 103
 Governor
 Governor design. : RSV350...1300MWOA318
 -3
 Governor no. : 0 420 085 087

Customer-spec. information
 Customer : DB

Engine : OM364A

1st version kW : 85.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 12.40...12.50

Del. quantity cm³/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.1...7.2

Del. quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Del. quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.40

Speed rpm : 1320...1330

2nd rack travel in: 4.00

Speed rpm : 1390...1420

4th rack travel in: 1480
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 7.10...7.20
Rack travel in mm : 2.00
Speed rpm : 470...530

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 12.40...12.60
2nd speed rpm : 750
Rack travel in m: 13.20...13.40
3rd speed rpm : 950
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 79.0...81.0
1000 s: (77.0...83.0)
Spread cm³ : 5.00
1000 s: (7.0)
Speed rpm : 950
Del.quantity cm³/ : 83.0...86.0
1000 s: (80.5...88.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 83.0...93.0
1000 s: (80.0...96.0)

LOW IDLE

D01

Speed rpm : 350
Rack travel in mm : 7.10...7.20
Del.quantity cm³/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 50
 Edition : 24.06.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 027
 Injection pump
 Pump designation : PES6MW100/72ORS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RSV350...1300MW1A316
 -6
 Governor no. : 0 420 085 098

Customer-spec. information
 Customer : DB

Engine : OM366A

1st version kW : 125.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300
 Rack travel in mm : 10.70...10.80
 Del. quantity cm³/ : 7.2...7.4
 100 s : (7.0...7.6)
 Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 7.0...7.6
 Del. quantity cm³/ : 0.9...1.1
 100 s : (0.7...1.3)
 Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1300
 Del. quantity : 72.0...74.0
 1000 : (70.0...76.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 54...62

Setting point:
 Speed rpm : 800
 Rack travel in mm : 0.6

Testing:
 1st rack travel in: 9.70

Speed rpm : 1340...1345
2nd rack travel in: 4.00
Speed rpm : 1380...1393
3rd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 12...20

Speed rpm : 350

Rack travel in mm : 7.00...7.60

Rack travel in mm : 2.00

Speed rpm : 445...505

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300

Rack travel in m: 10.70...10.80

2nd speed rpm : 700

Rack travel in m: 12.30...12.40

3rd speed rpm : 825

Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700

Del.quantity cm3/ : 69.0...71.0

1000 s: (67.0...73.0)

Spread cm3 : 5.00

1000 s: (7.0)

Speed rpm : 825

Del.quantity cm3/ : 73.0...75.0

1000 s: (71.0...77.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70

Speed rpm : 1340...1345

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 7.00...7.60

Del.quantity cm3/ : 9.0...11.0
1000 s: (7.0...13.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5.7 A 17
Edition : 20.05.88
Replaces : 12.85
Test oil : ISO-4113

Combination no. : 0 403 476 028

Injection pump
Pump designation : PES6MW100/72ORS1125
EP type number : 0 413 406 119
Governor
Governor design. : RSV300...1300MWOA317
Governor no. : 0 420 085 045

Customer-spec. information
Customer : DB

Engine : OM 362 LA

1st version kW : 141.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.20...3.30
: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.80...11.90

Del. quantity cm3/ : 9.6...9.8

100 s: (9.4...10.0)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.0

Del. quantity cm3/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 900

Del. quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 55...63

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.80

Speed rpm : 1330...1340

2nd rack travel in: 4.00

Speed rpm : 1400...1430

4th rack travel in: 1560
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.9

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 300
Rack travel in mm : 5.90...6.00

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : 350
Rack travel in m: 10.50...10.70
2nd pressure hPa : 450
Rack travel in m: 11.40...11.60
3rd pressure hPa : -
Rack travel in m: 9.70...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 800
Del.quantity cm3/ : 97.0...99.0
1000 s: (95.0...101.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version
1mm rack travel less than

DOS

full load rack tr: 10.80
Speed rpm : 1330...1340

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.90...6.00
Del.quantity cm3/ : 11.0...15.0
1000 s: (9.0...17.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 45
 Edition : 20.05.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 029
 Injection pump
 Pump designation : PES6MW100/72ORS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RSV350...1200MW1A316
 -1
 Governor no. : 0 420 085 048

Customer-spec. information
 Customer : DB

Engine : OM366A

1st version kW : 110.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.80...9.90

Del. quantity cm³/ : 6.9...7.1

100 s : (6.7...7.3)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...7.0

Del. quantity cm³/ : 0.9...1.1

100 s : (0.7...1.3)

Spread cm³ : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 69.0...71.0

1000 : (67.0...73.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 52...60

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.80

Speed rpm : 1240...1245
2nd rack travel in: 4.00
Speed rpm : 1280...1293
3rd rack travel in: 4.00
Speed rpm : 1300...1330
4th rack travel in: 1360
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 12...20

Rack travel in mm : 2.00

Speed rpm : 465...525

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 9.90...10.10

2nd speed rpm : 750

Rack travel in m: 10.60...10.70

3rd speed rpm : 950

Rack travel in m: 10.30...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 56.0...58.0

1000 s: (54.0...60.0)

Spread cm3 : 5.00

1000 s: (7.0)

Speed rpm : 900

Del.quantity cm3/ : 71.0...73.0

1000 s: (69.0...75.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 6.40...7.00

Del.quantity cm3/ : 9.0...11.0

1000 s: (7.0...13.0)

Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 44
 Edition : 20.05.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 036
 Injection pump
 Pump designation : PES6MW100/72ORS1129
 EP type number : 0 413 406 121
 Governor
 Governor design. : RSV350...1300MWOA317
 -1
 Governor no. : 0 420 085 051

Customer-spec. information
 Customer : DB

Engine : OM 366 LA

1st version kW : 150.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 9.7...9.9

100 s: (9.5...10.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 900

Del.quantity : 97.0...99.0

1000 : (95.0...101.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 56...64

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.50

Speed rpm : 1320...1330

2nd rack travel in: 4.00

Speed rpm : 1385...1415
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.6

Testing:

Speed rpm : 100
Minimum rack travel: 7.60
Speed rpm : 350
Rack travel in mm : 5.50...5.70

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.50...9.60

Measurement

Speed 1/min : 500

1st pressure hPa : 175
Rack travel in m: 10.00...10.20
2nd pressure hPa : 300
Rack travel in m: 10.80...11.00
3rd pressure hPa : 900
Rack travel in m: 11.50...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 750
Del.quantity cm3/ : 85.0...89.0
1000 s: (83.0...89.0)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 48.0...50.0
1000 s: (46.0...52.0)

BREAKAWAY

1st version

009

1mm rack travel less than

full load rack tr: 10.50
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.50...5.70
Del.quantity cm3/ : 8.0...12.0
1000 s: (6.0...14.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 41
Edition : 19.05.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 403 476 037
Injection pump
Pump designation : PES6MW100/72ORS1130
EP type number : 0 413 406 122
Governor
Governor design. : RSV350...1300MWOA318
Governor no. : 0 420 085 052

Customer-spec. information
Customer : DB

Engine : OM 366 A

1st version kW : 125.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.00...11.20

Del. quantity cm³/ : 7.7...7.9

100 s : (7.5...8.1)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 750.0

Rack travel in mm : 11.7...11.8

Del. quantity cm³/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm³ : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Del. quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 55...63

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.00

Speed rpm : 1320...1330

2nd rack travel in: 4.00

Speed rpm : 1380...1410

4th rack travel in: 1560

Speed rpm : 0.30...1.70

Spread cm³ : 3.50
1000 s: (5.50)

LOW IDLE 1

Control lever

position degrees: 25...33

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 8.0

Remarks:

:

Testing:

Speed rpm : 100

Minimum rack trave: 19.00

Speed rpm : 350

Rack travel in mm : 8.00...8.10

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1280

Rack travel in m: 11.00...11.20

2nd speed rpm : 750

Rack travel in m: 11.70...11.80

3rd speed rpm : 825

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm³/ : 72.0...74.0

1000 s: (70.0...76.0)

Spread cm³ : 5.00

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 78.0...88.0

1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 350

Rack travel in mm : 8.00...8.10

Del.quantity cm³/ : 9.0...13.0

1000 s: (7.0...15.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 46
 Edition : 08.06.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 055
 Injection pump
 Pump designation : PES6MW100/72ORS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RSV350...1200MW1A316
 -8
 Governor no. : 0 420 085 097

Customer-spec. information
 Customer : DB

Engine : OM366A

1st version kW : 92.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.60...9.70

Del. quantity cm³/ : 6.0...6.2

100 s : (5.8...6.4)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.9

Del. quantity cm³/ : 0.9...1.1

100 s : (0.6...1.4)

Spread cm³ : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 15.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 60.0...62.0

1000 : (58.0...64.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.60

Speed rpm : 1240...1245
2nd rack travel in: 4.00
Speed rpm : 1263...1276
3rd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1450
Speed rpm : 0.30...1.70
5th rack travel in: 1240...1255
Speed rpm : 8.60

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.6

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 350
Rack travel in mm : 6.30...6.90
Rack travel in mm : 2.00
Speed rpm : 415...475

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 9.60...9.70
2nd speed rpm : 800
Rack travel in m: 10.50...10.60
3rd speed rpm : 950
Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 59.0...61.0
1000 s: (57.0...63.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.60
Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

D13

Speed rpm : 350
Rack travel in mm : 6.30...6.90
Del.quantity cm3/ : 9.0...11.0
1000 s: (6.0...14.0)
Spread cm3 : 3.50
1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 18
Edition : 20.05.88
Replaces : 14.11.86
Test oil : ISO-4113
Combination no. : 0 403 476 057
Injection pump
Pump designation : PES6MW100/72ORS1129-
2
EP type number : 0 413 406 140
Governor
Governor design. : RSV300...1300MWOA324
Governor no. : 0 420 085 079

Customer-spec. information
Customer : DB

Engine : OM 366 LA

1st version kW : 150.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
: (3.65...3.85)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 9.3...9.5

100 s: (9.1...9.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 900

Del.quantity : 93.0...95.0

1000 : (91.0...97.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 56...64

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.90

Speed rpm : 1320...1330

2nd rack travel in: 4.00

Speed rpm : 1385...1415
4th rack travel in: 1450
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 7.60
Speed rpm : 300
Rack travel in mm : 5.90...6.10

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.90...10.00

Measurement

Speed 1/min : 500

1st pressure hPa : 175
Rack travel in m: 10.40...10.60
2nd pressure hPa : 300
Rack travel in m: 11.20...11.40
3rd pressure hPa : 900
Rack travel in m: 11.90...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 750
Del. quantity cm³/ : 83.0...87.0
1000 s: (81.0...89.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 46.0...48.0
1000 s: (44.0...50.0)

BREAKAWAY

1st version

D15

1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 88.0...98.0
1000 s: (85.0...101.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.90...6.10
Del. quantity cm³/ : 9.0...13.0
1000 s: (7.0...15.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 38
 Edition : 30.05.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 476 059
 Injection pump
 Pump designation : PES6MW100/72ORS1130
 EP type number : 0 413 406 122
 Governor
 Governor design. : RSV575...1250MWOA325
 Governor no. : 0 420 085 083

Customer-spec. information
 Customer : DB

Engine : OM 366 A

1st version kW : 125.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1230

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 7.8...8.0

100 s: (7.6...8.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 575.0

Rack travel in mm : 5.6...5.7

Del.quantity cm3/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1230

Del.quantity : 78.0...80.0

1000 : (76.0...82.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.90

Speed rpm : 1270...1280

2nd rack travel in: 4.00

Speed rpm : 1300...1330

4th rack travel in: 1350

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 24...32

Setting point w/out bumper spring

Speed rpm : 575

Rack travel in mm : 5.6

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 575

Rack travel in mm : 5.60...5.70

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del. quantity cm³/ : 55.0...59.0

1000 s: (53.0...61.0)

Spread cm³ : 5.00

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1270...1280

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm³/ : 78.0...88.0

1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 575

Rack travel in mm : 5.60...5.70

Del. quantity cm³/ : 9.0...13.0

1000 s: (7.0...15.0)

Spread cm³ : 3.50

1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 8,7 p 2
 Edition : 20.6.88
 Replaces : 12.9.86
 Test oil : ISO-4113
 Combination no. : 0 403 564 008
 Injection pump
 Pump designation : PE6MW100/72ORS1126
 EP type number : 0 413 506 101
 Governor
 Governor design. : RQ300...1250MW12-2
 Governor no. : 0 420 082 020

Customer-spec. information
 Customer : DAIMLER BENZ

Engine : OM360A

1st version kW : 147.00
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar : 30...32
 Prestroke mm : 3.80...3.90
 : (3.75...3.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
 : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

 Rack travel in mm : 12.90...13.00

 Del.quantity cm3/ : 9.70...9.90

 100 s : (9.50...10.10)

 Spread cm3 : 0.35

 100 s : (0.60)

 2nd speed rpm : 300
 Rack travel in mm : 8.60...8.70
 Del.quantity cm3/ : 1.00...1.40
 100 s : (0.70...1.60)
 Spread cm3 : 0.35
 100 s : (0.50)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 650
 Rack travel in mm : 13.10...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del.quantity : 97.00...99.00
 1000 : (95.0...101.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 650
 Rack travel in mm : 13.5

Testing:
 1st rack travel in: 11.90
 Speed rpm : 1295...1310
 2nd rack travel in: 4.00
 Speed rpm : 1415...1445
 3rd rack travel in: 0.10...1.00
 Speed rpm : 1550

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.60...8.70

Testing:

Speed rpm : 220
Minimum rack trave: 10.40
Speed rpm : 300
Rack travel in mm : 8.60...8.70
Rack travel in mm : 2.00
Speed rpm : 430...470

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MTU 37,4 C
Edition : 20.10.87
Replaces : -
Test oil : ISO-4113

Combination no. : 0 406 039 111

Injection pump
Pump designation : PE10ZWM160/120ZWA68R
EP type number : 0 416 069 001
Governor
Governor design. : RQU425/1200ZWA68R
Governor no. : 0 422 407 036

Customer-spec. information
Customer : MTU

Engine : MB 838 KA

1st version kW : 100
Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 443 022

Opening
pressure, bar : 172...175

Test lines : 1 680 750 016

Outside diameter
x Wall thickness
x Length mm : 8,00x2,00x1500

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Prestroke mm : 2.50...2.60
: (2.45...2.65)
Rack travel in mm : 12.00
Firing order : 10-3-4-5-6-7-8-1-2-9

D20

Phasing : 0-27-72-99-144-171-
216-243-288-315
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 15.00

Del. quantity cm3/ : 51.5...53.5

100 s : (51.0...54.0)

Spread cm3 : 1.5

100 s : (2.2)

2nd speed rpm : 1000
Rack travel in mm : 9.00
Del. quantity cm3/ : 26.5...28.5
100 s : (26.0...29.0)
Spread cm3 : 1.5
100 s : (2.2)
3rd speed rpm : 300
Rack travel in mm : 9.00
Del. quantity cm3/ : 15.0...18.0
100 s : (14.5...18.5)
Spread cm3 : 2.0
100 s : (3.0)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1200
Rack travel in mm : 18.00...18.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1200
Del. quantity : 505.0...515.0
1000 : (500.0...520.0)
Spread cm3 : 15.0
1000 : (22.0)

RATED SPEED

1st version
Control lever
position degrees: 52...58

Testing:
1st rack travel in: 15.00
Speed rpm : 1200
2nd rack travel in: 14.00
Speed rpm : 1225...1240

3rd rack travel in: 4.00
Speed rpm : 1312...1352
4th rack travel in: 1339...1389
Speed rpm : 0.01

APPLICATION
Special-purpose vehicle

LOW IDLE 1
Control lever
position degrees: 20...26
Setting point w/out bumper spring
Speed rpm : 425
Rack travel in mm : 6.80

Testing:
Speed rpm : 200
Minimum rack trave: 18.00
Speed rpm : 300
Rack travel in mm : 12.60...16.60
Rack travel in mm : 6.80
Speed rpm : 425
Speed rpm : 1275
Maximum rack trave: 0.01
Rack travel in mm : 1.50
Speed rpm : 600...1200

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.00
Speed rpm : 1225...1240

HIGH IDLE

1st version
Rack travel in mm : 4.00
Spread cm³ : 12.0
1000 s: (-)

LOW IDLE

Speed rpm : 425
Rack travel in mm : 6.80
Del. quantity cm³/ : 104.0...111.0
1000 s: (-)
Spread cm³ : 10.0
1000 s: (-)

Remarks:

:

Set idle stop at 425 min -1 to a
control-rod travel of 6.8 mm.
Limit shutoff stop screw to 1.0 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a 5
Edition : 24.07.87
Replaces : 21.5.87
Test oil : ISO-4113

Combination no. : 9 400 083 454

Injection pump
Pump designation : PES6A100D320/3RS2691
EP type number : 9 410 230 025
Governor
Governor design. : RSV400...900A7C2209-1R
Governor no. : 9 420 083 232

Customer-spec. information
Customer : CUMMINS

Engine : 6 CT 8.3

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 047

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00
& maximum rack tra: 21.00
Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.70...12.80

Del. quantity cm³/ : 12.9...13.0

100 s: (12.7...13.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 1.6...2.0

100 s: (1.4...2.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del. quantity : 129.0...130.0

1000 : (127.0...132.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 11.70
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 970...1000
4th rack travel in: 1100
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 420...480

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 12.70...12.80
2nd speed rpm : 500
Rack travel in m: 12.70...12.90
5th speed rpm : 400
Rack travel in m: 13.70...14.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 115.0...118.0
1000 s: (112.5...120.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...149.0
1000 s: (132.0...152.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.90...6.10

D23

Del.quantity cm3/ : 16.5...20.5
1000 s: (14.0...23.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

Start-of-delivery mark at 10° cam
rotation angle after start of delivery,
cylinder 1
APPLICATION
Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 10,0 q7
Edition : 21.05.87
Replaces : 5.85
Test oil : ISO-4113

Combination no. : 9 400 087 330

Injection pump
Pump designation : PE6P110A320RS3108
EP type number : 0 411 816 727
Governor
Governor design. : RQV250...1100PA589-1
Governor no. : 9 420 080 166

Customer-spec. information
Customer : VOLVO

Engine : THD100 ED

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.20

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del. quantity cm3/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm3 : 0.4

100 s: (0.8)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del. quantity cm3/ : 3.2...3.6

100 s: (-)

Spread cm3 : 0.3
100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
travel mm : 1.20...1.40

2nd speed rpm : 500
travel mm : 4.10...4.80

3rd speed rpm : 700
travel mm : 6.40...6.60

4th speed rpm : 1000
travel mm : 6.40...6.60

5th speed rpm : 1100
travel mm : 7.10...7.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 750

Del. quantity : 158.0...160.0

1000 : (155.0...163.0)

Spread cm3 : 4.00

1000 : (8.00)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:
1st rack travel in: 11.10
Speed rpm : 1160...1170
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 6...14

Testing:
Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 250
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 345...405

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 750
Rack travel mm : 12.10...12.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.30...9.40
2nd pressure hPa : 600
Rack travel in m: 11.30...11.50
3rd pressure hPa : 300
Rack travel in m: 9.60...9.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 700
Del. quantity cm³/ : 105.0...107.0
1000 s: (102.0...110.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.10
Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 160.0...190.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks:

Test sheet : CAS 8,3 k 5
Edition : 6.7.88
Replaces : 26.2.87
Test oil : ISO-4113

Combination no. : 9 400 230 005

Injection pump
Pump designation : PES6A95D420LS2551
Governor
Governor design. : RSV372...1070A2B2034
R

Customer-spec. information
Customer : CASE

Engine : A-504 BD

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: WS 187P

Inlet press., bar : 1.50

Test nozzle holder
assembly : 9 681 343 009

Opening
pressure, bar : 172...175

Test lines : 9 681 230 705

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Prestroke mm : 2.20...2.30
: (2.15...2.35)
Rack travel in mm : 13.35
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.35

Del. quantity cm³/ : 11.3...11.5

100 s : (-)

Spread cm³ : 0.3

100 s : (-)

2nd speed rpm : 375
Rack travel in mm : 8.10
Del. quantity cm³/ : 1.6...2.2
100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Del. quantity : 113.0...115.0
1000 : (111.0...117.0)
Spread cm³ : 3.0
1000 : (-)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 12.25
Speed rpm : 1090...1100
2nd rack travel in: 6.90
Speed rpm : 1170...1200
3rd rack travel in: 2.00
Speed rpm : 1205...1235

LOW IDLE 1

Control lever
position degrees: 27...35
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 8.15

Testing:

Speed rpm : 150
Minimum rack trave: 19.00
Speed rpm : 375
Rack travel in mm : 8.10...8.20
Rack travel in mm : 3.00
Speed rpm : 530...570

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 425
Rack travel in m: 14.50...14.60

START CUT-OUT

Speed 1/min : 190

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 113.0...117.0
1000 s: (111.0...119.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.25
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...150.0
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1185
Rack travel in mm : 6.80...7.00

LOW IDLE

Speed rpm : 375
Del.quantity cm3/ : 16.0...22.0
1000 s: (-)

Remarks:

: CASE NO. A-151333

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 m
Edition : 6.7.88
Replaces : 7.86
Test oil : ISO-4113
Combination no. : 9 400 230 022
Injection pump
Pump designation : PES6A100D41ORS3032
Governor
Governor design. : RSV400...1100A2B2086

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466T

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 413 385 007

Inlet press., bar : 1.5

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter
x Wall thickness
x Length mm : 6,00X2,00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Prestroke mm : 1,95...2,05
: (1,90...2,10)
Rack travel in mm : 21,00
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0,50 (0,75)

D28

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 11,45
Del. quantity cm3/ : 10,9...11,1
100 s: (-)
Spread cm3 : 0,3
100 s: (-)
2nd speed rpm : 400
Rack travel in mm : 6,80
Del. quantity cm3/ : 1,3...1,7
100 s: (-)
Spread cm3 : 0,4

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0,3...1,0

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del. quantity : 109,0...111,0
1000 : (-)
Spread cm3 : 3,0
1000 : (-)

RATED SPEED

1st version
Control lever
position degrees: 35...43

Testing:
1st rack travel in: 10,45
Speed rpm : 1145...1155
2nd rack travel in: 4,00
Speed rpm : 1195...1225
4th rack travel in: 1250
Speed rpm : 0,30...1,70

LOW IDLE 1

Control lever
position degrees: 14...20
Setting point w/out bumper spring

Speed rpm : 400
Rack travel in mm : 6,30

Testing:

Speed rpm : 100
Minimum rack trave: 19,00
Speed rpm : 400
Rack travel in mm : 6,70...6,90
Rack travel in mm : 2,00
Speed rpm : 460...520
Speed rpm : 600
Maximum rack trave: 1,00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11,40...11,50
2nd speed rpm : 1000
Rack travel in m: 11,35...11,65
3rd speed rpm : 750
Rack travel in m: 12,75...12,95

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 420
Rack travel mm : 12,75...12,85

Measurement

Speed 1/min : 500

1st pressure hPa : 200
Rack travel in m: 11,10...11,50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 126,0...129,0
1000 s: (-)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 78,5...81,5
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.45
Speed rpm : 1145...1155

E01

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 172.0...192.0
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1200
Rack travel in mm : 5.60
Del.quantity cm3/ : 27.0...37.0
1000 s: (-)

LOW IDLE

Speed rpm : 400
Del.quantity cm3/ : 13.0...17.0
1000 s: (-)

Remarks:

: JOHN DEERE NO.
: AR 94029

Start-of-delivery mark at control-rod
travel 10.5 mm and 15° after start of
delivery.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 c 4
 Edition : 15.06.88
 Replaces : 6.11.87
 Test oil : ISO-4113

Combination no. : 9 400 230 045

Injection pump
 Pump designation : PES6A95D41ORS2522-1
 EP type number : 9 410 230 017
 Governor
 Governor design. : RSV425...1100A2C2161
 L
 Governor no. : 9 420 234 140

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466T

1st version kW : 106.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 1.85...1.95
 : (1.80...2.00)

Rack travel in mm : 10.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.00...9.10

Del. quantity cm³/ : 8.6...8.8

100 s: (8.4...9.0)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 5.5...5.7

Del. quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 500

Del. quantity : 86.5...88.5

1000 : (84.0...90.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.00

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1185...1195

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 21...29

Setting point w/out bumper spring

Speed rpm : 425

Rack travel in mm : 5.1

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 425

Rack travel in mm : 5.50...5.70

Rack travel in mm : 2.00

Speed rpm : 590...650

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 9.00...9.10

2nd speed rpm : 650

Rack travel in m: 10.40...10.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 10.20...10.40

Measurement

Speed 1/min : 500

1st pressure hPa : 100

Rack travel in m: 10.30...10.40

2nd pressure hPa : 149

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 500

Speed rpm : 650

Del.quantity cm³/ : 100.5...105.5

1000 s: (98.5...108.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm³/ : -

1000 s: (87.0...95.0)

BREAKAWAY

1st version

E03

1mm rack travel less than

full load rack tr: 8.00

Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 155.0...175.0

1000 s: (150.0...180.0)

Rack travel in mm : 19.00...21.00

HIGH IDLE

1st version

Speed rpm : 1180

Rack travel in mm : 5.30...5.50

LOW IDLE

Speed rpm : 425

Rack travel in mm : 5.50...5.70

Del.quantity cm³/ : 18.0...22.0

1000 s: (15.5...24.5)

Spread cm³ : 3.50

1000 s: (5.50)

Remarks:

: JOHN DEERE NO.

: RE 23750

Setting without torque-control spring retainer with 1 mm control-rod travel less. Raising of full-load delivery with torque-control spring retainer to 9,0 mm control-rod travel.

Start-of-delivery mark 16° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAS 8,3 h 1
Edition : 20.6.88
Replaces : 7.86
Test oil : ISO-4113
Combination no. : 9 400 230 058
Injection pump
Pump designation : PES6A95D320LS2647
Governor
Governor design. : RSV400...1100A2B2172
-R

Cust. part no. : A 156989

Customer-spec. information
Customer : CASE

Engine : A 504 BDT

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 9 681 273 009

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 175

Test lines : 9 681 230 706

Outside diameter
x Wall thickness
x Length mm : 6,00X2,00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Rack travel in mm : 10.50
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0-60-120-180-240-300
: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.80

Del. quantity cm3/ : 10.20...10.40

Spread cm3 : 0.35

100 s : (0.60)

2nd speed rpm : 400

Rack travel in mm : 5.20

Del. quantity cm3/ : 1.80...2.20

Spread cm3 : 0.35

100 s : (0.55)

GUIDE SLEEVE POSITION

Control-lever position

Degree: LOSE

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 102.50...104.50

1000 : (100.5...106.5)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 8.80

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1300

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 4.70

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 400
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 9.80
2nd speed rpm : 750
Rack travel in m: 10.55...10.75
3rd speed rpm : 600
Rack travel in m: 10.95...11.05

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 110.00...114.00
1000 s: (108.5...116.5)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.00...150.00
1000 s: (137.0...153.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 H1
 Edition : 14.6.88
 Replaces : 7.86
 Test oil : ISO-4113
 Combination no. : 9 400 230 066
 Injection pump
 Pump designation : PES6A100D410RS2676
 Governor
 Governor design. : RSV425...1100A2B2161
 -1L

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466 T

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.5

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Prestroke mm : 2,45...2,55
 : (2,40...2,60)
 Rack travel in mm : 10,50
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

E06

Tolerance + - ° : 0-60-120-180-240-300
 : 0,50 (0,75)

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 9,4
 Del.quantity cm3/ : 9,90...10,10
 Spread cm3 : 0,35
 100 s: (0,60)
 2nd speed rpm : 425
 Rack travel in mm : 5,6
 Del.quantity cm3/ : 2,10...2,50
 Spread cm3 : 0,35
 100 s: (0,55)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: LOSE
 Speed rpm : 800
 Rack travel in mm : 0,30...1,00

Governor spring pre-tension
 Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 600
 Del.quantity : 99,00...101,00
 1000 : (97,00...103,00)

RATED SPEED

1st version
 Control lever
 position degrees: 46...54

Testing:
 1st rack travel in: 8,40
 Speed rpm : 1145...1155
 2nd rack travel in: 4,00
 Speed rpm : 1195...1225
 3rd rack travel in: 0,30...1,70
 Speed rpm : 1300

LOW IDLE 1

Control lever
 position degrees: 22...30
 Setting point w/out bumper spring
 Speed rpm : 425
 Rack travel in mm : 5,00...5,20

Testing:

Speed rpm : 100
Minimum rack trave: 19,00
Speed rpm : 425
Rack travel in mm : 5,50...5,70
Rack travel in mm : 2,00
Speed rpm : 600...660

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100
Rack travel in m: 9,40
2nd speed rpm : 750
Rack travel in m: 10,60...10,80

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 170
Rack travel mm : 10,25...10,35

Measurement

Speed 1/min : 500

1st pressure hPa : 80
Rack travel in m: 9,40...9,80
2nd pressure hPa : 80
Rack travel in m: 9,20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600
Speed rpm : 750
Del.quantity cm3/ : 116,00...119,00
1000 s: (113,50...121,50
Speed rpm : 500
Del.quantity cm3/ : 86,50...89,50
1000 s: (84,00...92,00)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h 3
Edition : 20.6.88
Replaces : 7.86
Test oil : ISO-4113
Combination no. : 9 400 230 068
Injection pump
Pump designation : PES6A100D41ORS2676-1
Governor
Governor design. : RSV450...1000A1B2186
-L

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466 A

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 413 009

Opening
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter
x Wall thickness
x Length mm : 6,00X2,00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 10.50
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0-60-120-180-240-300
: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 9.90...10.00
Del.quantity cm3/ : 10.50...10.70
Spread cm3 : 0.35
100 s: (0.60)
2nd speed rpm : 450
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 1.80...2.20
Spread cm3 : 0.35
100 s: (0.60)

GUIDE SLEEVE POSITION

Control-lever position
Degree: LOSE
Speed rpm : 800
Rack travel in mm : 0.30...1.000

Governor spring pre-tension
Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del.quantity : 105.00...107.00
1000 : (103.0...109.0)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 8.90
Speed rpm : 1045...1055
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.80

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 450
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 9.90...20.00
2nd speed rpm : 700
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 109.50...112.50
1000 s: (107.0...115.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h 4
Edition : 20.6.88
Replaces : 7.86
Test oil : ISO-4113
Combination no. : 9 400 230 068
Injection pump
Pump designation : PES6A100D41ORS2676-1
Governor
Governor design. : RSV450...1000A1C2186
-L

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466 A

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter
x Wall thickness
x Length mm : 6,00X2,00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 10.50
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75) 0-60-120-180-240-300

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 9.90...10.00
Del. quantity cm³/ : 10.50...10.70
Spread cm³ : 0.35
100 s : (0.60)
2nd speed rpm : 450
Rack travel in mm : 5.20...5.40
Del. quantity cm³/ : 1.80...2.20
Spread cm³ : 0.35
100 s : (0.60)

GUIDE SLEEVE POSITION

Control-lever position
Degree: LOSE
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : -

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del. quantity : 105.00...107.00
1000 : (103.0...109.0)

RATED SPEED

1st version
Control lever
position degrees: 48...56

Testing:
1st rack travel in: 8.90
Speed rpm : 1045...1055
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring
Speed rpm : 450
Rack travel in mm : 4.80

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 450
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 9.90...20.00
2nd speed rpm : 700
Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm3/ : 109.50...112.50
1000 s: (107.0...115.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 9,0 d
Edition : 20.6.88
Replaces : 7.86
Test oil : ISO-4113
Combination no. : 9 400 230 087
Injection pump
Pump designation : PES8A95D320RS2708
Governor
Governor design. : RQV325...1400AB1213
-1R

Customer-spec. information
Customer : IHC

Engine : D9L

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 019

Inlet press., bar : 2.8

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 9 681 230 702

Outside diameter
x Wall thickness
x Length mm : 6,00X2,00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Prestroke mm : 3.30...3.40
: (3.25...3.45)
Rack travel in mm : 10.50
Firing order : 1-8-7-3-6-5-4-2

Phasing : 0-45-90-135-180-225-
0-45-90-135-180-225-

Tolerance + - ° : 270-315
: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400
Rack travel in mm : 11.40...11.50
Del. quantity cm3/ : 7.30...7.50
Spread cm3 : 0.35
100 s: (0.60)
2nd speed rpm : 350
Rack travel in mm : 6.70...6.90
Del. quantity cm3/ : 0.90...1.30
Spread cm3 : 0.35
100 s: (0.55)

GUIDE SLEEVE POSITION

Control-lever position
Degree: MAX
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1400
Del. quantity : 73.00...75.00
1000 : (71.0...77.0)

RATED SPEED

1st version
Control lever
position degrees: 61.50...66.50

Testing:
1st rack travel in: 10.40
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1555...1585
4th rack travel in: 1650
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:
Speed rpm : 100
Minimum rack travel: 8.00
Rack travel in mm : 2.00
Speed rpm : 640...700

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1400
Rack travel in m: 11.75
2nd speed rpm : 1200
Rack travel in m: 11.90...12.10
3rd speed rpm : 845
Rack travel in m: 12.15...12.35

START CUT-OUT

Speed 1/min : 150...190

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 840
Del.quantity cm3/ : 62.50...65.50
1000 s: (60.00...68.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : MIND.180
1000 s: (MIND.175)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 a 2
 Edition : 14.6.88
 Replaces : 4.3.87
 Test oil : ISO-4113
 Combination no. : 9 400 230 098
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 Governor
 Governor design. : RSV425...1100A2C2190
 -9R

Customer-spec. information
 Customer : CUMMINS

Engine : 6CTA 8,3

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.5

Test nozzle holder
 assembly : 1 688 901 016

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0.5

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
 : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1100
 Rack travel in mm : 13,00...13,10
 Del. quantity cm3/ : 11.4...11.6
 100 s : (11.1...11.8)
 Spread cm3 : 0.35
 100 s : (0.6)
 2nd speed rpm : 425
 Rack travel in mm : 5,80...6,00
 Del. quantity cm3/ : 1.30...1.70
 100 s : (-)
 Spread cm3 : 0.35
 100 s : (0.55)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Del. quantity : 113.5...115.5
 1000 : (111.5...117.5)

RATED SPEED

1st version
 Control lever
 position degrees: 38...46

Testing:
 1st rack travel in: 12.00
 Speed rpm : 1140...1150
 2nd rack travel in: 4.00
 Speed rpm : 1190...1220
 3rd rack travel in: 4.00
 Speed rpm : 1200...1230
 4th rack travel in: 1300
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
 position degrees: 15...23
 Setting point w/out bumper spring
 Speed rpm : 425

Rack travel in mm : 5.40

Testing:

Speed rpm : 100
Minimum rack trave: 19.00
Speed rpm : 425
Rack travel in mm : 5.80...6.00
Rack travel in mm : 2.00
Speed rpm : 470...530

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0
1000 s: (130.0)
Rack travel in mm : 21,00

LOW IDLE

Speed rpm : 425
Del.quantity cm3/ : 13.0...17.0
1000 s: (10.5...19.5)

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 1,5C
Edition : 14.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 3/10F2100 L233
Type number : 0 460 403 009
Customer Part-No. :

Customer-specific information
Customer : VM

Engine : HR 392 SH 40

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,4
(from BDC): +-0,02 (0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 4,7...5,1

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 5,2...5,8

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del.quantity cm3/
1000H.: 39,7...40,7
Dispersion cm3/: 3,0
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm3/
1000H.: 20,0...24,0
Dispersion cm3/: 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2350
Del.quantity cm3/
1000H.: 14,5...20,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 40,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 0,6...1,4
mm: (0,3...1,7)
2nd speed 1/min: 1000
TD travel mm: 1,8...2,6
mm: (1,5...2,9)
3rd speed 1/min: 1500
TD travel mm: 4,7...5,1
mm: (4,2...5,6)
4th speed 1/min: 2100
TD travel mm: 7,0...7,8
mm: (6,7...8,1)

Supply-pump pressure characteristic:

1st speed 1/min: 750
Supply-pump
pressure bar: 2,9...3,5
2nd speed 1/min: 1500
Supply-pump
pressure bar: 5,2...5,8
3rd speed 1/min: 2100

Supply-pump
pressure bar: 7,1...7,7

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2100
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2500
Del.quantity cm3/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 2400
Del.quantity cm3/: 1,0...9,0
1000H.: (0,5...9,5)
3rd speed 1/min: 2350
Del.quantity cm3/: 14,5...20,5
1000H.: (13,5...21,5)
4th speed 1/min: 2300
Del.quantity cm3/: 22,0...30,0
1000H.: -
5th speed 1/min: 2100
Del.quantity cm3/: 35,0...38,0
1000H.: (33,5...39,5)
6th speed 1/min: 1500
Del.quantity cm3/: 39,7...40,7
1000H.: (38,2...42,2)
7th speed 1/min: 1000
Del.quantity cm3/: 42,9...45,5
1000H.: -
8th speed 1/min: 750
Del.quantity cm3/: 40,0...43,0
1000H.: (38,5...44,5)
9th speed 1/min: 600
Del.quantity cm3/: 37,0...40,0
1000H.: (35,5...41,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
Del.quantity cm3/: 20,0...24,0
1000H.: (17,0...27,0)
2nd speed 1/min: 480
Del.quantity cm3/: 2,5...8,5
1000H.: (0,5...10,5)

3rd speed 1/min: 600
Del.quantity cm3/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 400
Del.quantity cm3/: -
ind. 1000H: 53,0

2nd speed 1/min: 500
Del.quantity cm3/: -
max. 1000H : 45,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

KF	mm	: 5,6...6,0
MS	mm	: 0,6...1,0
SVS max.	mm	: 4,0
XK	mm	: 17,0...19,0
XL	mm	: 11,0...14,2

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 2,2H
Edition : 20.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/10F2100 L269
Type number : 0 460 404 050

Customer-specific information
Customer : VM

Engine : HR 492-4 HJ

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC) : -

Indicator setting:
Piston stroke mm : 1,0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 5,9...6,5

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 66,0...67,0
Dispersion cm³/
1000H.: (3,5)

Full-load del. w/out charge press.:

Speed 1/min : 700
Del.quantity cm³/
1000H.: 53,0...54,0

Low-idle speed regulation:

Speed 1/min: 450
Del.quantity cm³/
1000H.: 13,0...17,0
Dispersion cm³/
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 2100
Charge press. hPa: 1000
Del.quantity cm³/
1000H.: 57,7...60,7

Start:

Speed 1/min: 100
Del.quantity : -
mind cm³/1000H.: 47,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 1,3...2,1
mm: (1,0...2,4)
2nd speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 4,3...4,7
mm: (3,8...5,2)
3rd speed 1/min: 2100
Charge press. hPa: 1000

TD travel mm: 7,1...7,9
mm: (6,8...8,2)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Charge press. hPa: 1000
Supply-pump pressure bar: 3,1...3,7
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump pressure bar: 5,9...6,5
3rd speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump pressure bar: 7,5...8,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Charge press. hPa: -
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Charge press. hPa: 1000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 450
LDA stroke mm: 6,1
Del. quantity cm³/: 62,0...63,0
1000H.: (59,9...65,1)
2nd speed 1/min: 2450
Charge press. hPa: 1000
Del. quantity cm³/: 0,5...7,5
1000H.: (0,0...8,5)
3rd speed 1/min: 2300
Charge press. hPa: 1000
Del. quantity cm³/: 27,0...33,0
1000H.: (25,5...34,5)
4th speed 1/min: 2100
Charge press. hPa: 1000
Del. quantity cm³/: 57,7...60,7
1000H.: (54,7...63,7)
5th speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/: 66,0...67,0
1000H.: (63,9...69,1)
6th speed 1/min: 700
Charge press. hPa: 1000
Del. quantity cm³/: 67,5...70,5
1000H.: (66,4...71,6)
7th speed 1/min: 700
Charge press. hPa: 450

Del. quantity cm³/: 62,0...63,0
1000H.: (59,9...65,1)
8th speed 1/min: 700
Charge press. hPa: -
Del. quantity cm³/: 53,0...54,0
1000H.: (50,9...56,1)
9th speed 1/min: 600
Charge press. hPa: -
Del. quantity cm³/: 52,5...54,5
1000H.: (50,1...56,9)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 2100
ELAB volt: -
Del. quantity cm³/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 450
Del. quantity cm³/: 13,0...17,0
1000H.: (11,0...19,0)
2nd speed 1/min: 475
Del. quantity cm³/: 7,5...12,5
1000H.: (6,0...14,0)
3rd speed 1/min: 550
Del. quantity cm³/: 1,5...5,5
1000H.: (0,0...7,0)

Automatic starting fuel delivery:

1st speed 1/min: 400
Del. quantity cm³/: -
ind. 1000H.: 55,0
2nd speed 1/min: 550
Del. quantity cm³/: -
max. 1000H.: 57,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 0,6...1,0
XK	mm	: 17,0...19,0
XL	mm	: 10,3...13,7

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 2,2G
Edition : 13.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/10F2100 L168-2
Type number : 0 460 404 051
Customer Part-No. :

Customer-specific information
Customer : MOTORI VM

Engine : HR 492 HT

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 800
Setting value mm: 4,6...5,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 800

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Setting value bar: 4,8...5,4

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 800
Del. quantity cm3/
1000H.: 56,5...57,5
Dispersion cm3/ : 3,0
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del. quantity cm3/
1000H.: 45,5...46,5

Low-idle speed regulation:

Speed 1/min: 400
Charge press. hPa: -
Del. quantity cm3/
1000H.: 13,0...17,0
Dispersion cm3/ : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2300
Charge press. hPa: 800
Del. quantity cm3/
1000H: 27,0...33,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm3/1000H.: 37,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 800
TD travel mm: 1,6...2,4
mm: (1,3...2,7)
2nd speed 1/min: 1500
Charge press. hPa: 800
TD travel mm: 4,6...5,0
mm: (4,1...5,5)
3rd speed 1/min: 2100
Charge press. hPa: 800

TD travel mm: 7,6...8,4
mm: (7,3...8,7)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 800
Supply-pump pressure bar: 1,8...2,4
2nd speed 1/min: 1500
Charge press. hPa: 800
Supply-pump pressure bar: 4,8...5,4
3rd speed 1/min: 2100
Charge press. hPa: 800
Supply-pump pressure bar: 8,9...7,5

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 800
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Charge press. hPa: 800
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 450
LDA stroke mm: 6,1
Del. quantity cm³/: 52,0...53,0
1000H.: (50,0...55,0)
2nd speed 1/min: 2450
Charge press. hPa: 800
Del. quantity cm³/: 1,0...9,0
1000H.: (0,5...9,5)
3rd speed 1/min: 2300
Charge press. hPa: 800
Del. quantity cm³/: 27,0...33,0
1000H.: (26,0...34,0)
4th speed 1/min: 2100
Charge press. hPa: 800
Del. quantity cm³/: 48,9...51,9
1000H.: (47,4...53,4)
5th speed 1/min: 1500
Charge press. hPa: 800
Del. quantity cm³/: 56,5...57,5
1000H.: (55,0...59,0)
6th speed 1/min: 700
Charge press. hPa: 450
Del. quantity cm³/: 52,0...53,0
1000H.: (50,0...55,0)
7th speed 1/min: 600
Charge press. hPa: -

Del. quantity cm³/: 45,5...46,5
1000H.: (43,5...48,5)
8th speed 1/min: 600
Charge press. hPa: 800
Del. quantity cm³/: 58,55...61,5
1000H.: -

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400
ELAB volt: -
Del. quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
Del. quantity cm³/: 13,0...17,0
1000H.: 10,0...19,0
2nd speed 1/min: 450
Del. quantity cm³/: 2,5...8,5
1000H.: (0,5...10,5)
3rd speed 1/min: 600
Del. quantity cm³/: 0,0...2,0
1000H.: (0,0...2,0)

Automatic starting fuel delivery:

1st speed 1/min: 400
Del. quantity cm³/: -
ind. 1000H.: 45,0
2nd speed 1/min: 550
Del. quantity cm³/: -
max. 1000H.: 48,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 0,6...1,0
SVS max.	mm	: 2,3
XK	mm	: 17,0...19,0
XL	mm	: 9,4...12,8

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 3,9H
Edition : 20.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/10F1150 R283
Type number : 0 460 404 052
Customer Part-No. : 1329 124 C1

Customer-specific information
Customer : CASE

Engine : D 239/745

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,2
(from BDC): +-0,02 (0,04)

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800
Setting value mm: 4,5...4,9

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Supply-pump pressure:

Speed 1/min: 800
Setting value bar: 5,3...5,9

Full-load del. w/out charge press.:

Speed 1/min : 800
Del.quantity cm3/
1000H.: 75,0...76,0
Dispersion cm3/: 3,0
1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm3/
1000H.: 18,0...22,0
Dispersion cm3/: 3,0
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1215
Del.quantity cm3/
1000H.: 42,0...48,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 80,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,0...2,8
mm: (1,4...2,8)
2nd speed 1/min: 800
TD travel mm: 4,5...4,9
mm: (3,7...5,1)
3rd speed 1/min: 1100
TD travel mm: 6,3...7,1
mm: (5,9...7,3)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 4,1...4,7
2nd speed 1/min: 800
Supply-pump
pressure bar: 5,3...5,9
3rd speed 1/min: 1100

Supply-pump
pressure bar: 6,3...6,9

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1350
Del. quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1275
Del. quantity cm³/: 0,0...10,0
1000H.: (0,0...10,0)
3rd speed 1/min: 1225
Del. quantity cm³/: 10,0...46,0
1000H.: (10,0...46,0)
4th speed 1/min: 1215
Del. quantity cm³/: 42,0...48,0
1000H.: (41,5...49,5)
5th speed 1/min: 1100
Del. quantity cm³/: 73,0...76,0
1000H.: (72,0...77,0)
6th speed 1/min: 800
Del. quantity cm³/: 75,0...76,0
1000H.: (73,2...77,8)
7th speed 1/min: 500
Del. quantity cm³/: 69,0...73,0
1000H.: (68,0...74,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del. quantity cm³/: 0...3
1000H.: -

Idle delivery:

1st speed 1/min: 350
Del. quantity cm³/: 18,0...22,0
1000H.: (16,0...24,0)
2nd speed 1/min: 500
Del. quantity cm³/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del. quantity cm³/: -
ind. 1000H: 80,0

2nd speed 1/min: 450

Del. quantity cm³/: -
max. 1000H : 80,0

Mounting and assembly dimensions:

KF mm : 5,0...5,4
MS mm : 1,2...1,6
SVS max. mm : 3,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 2,3MS
Edition : 18.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/10F2100 L297
Type number : 0 460 404 055

Customer-specific information
Customer : OPEL

Engine : 2,3 YDR

Power k: 74

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 5,1...5,5

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 5,1...5,7
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 62,0...63,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 3,0
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del. quantity cm³/
1000H.: 40,5...41,5

Low-idle speed regulation:

Speed 1/min: 290
Del. quantity cm³/
1000H.: 13,5...17,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2425
Charge press. hPa: 1000
Del. quantity cm³/
1000H: 24,0...30,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 52,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
TD travel mm: 2,7...4,3
mm: (2,3...4,7)

KSB solenoid-operated
valve volt: -

2nd speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 3,8...6,2
mm: (3,2...6,8)

KSB solenoid-operated
valve volt: -

3rd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 0,0...6,2
mm: (0,0...6,2)

KSB solenoid-operated
valve volt: -

4th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)

KSB solenoid-operated
valve volt: 12,0

5th speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3,7...4,3
mm: (3,3...4,7)

KSB solenoid-operated
valve volt: 12,0

6th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5,1...5,5
mm: (4,6...6,0)

KSB solenoid-operated
valve volt: 12,0

1st speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 7,4...8,2
mm: (7,1...8,5)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
Supply-pump pressure bar: 4,2...4,8

KSB solenoid-operated
valve volt: -

2nd speed 1/min: 1200
Charge press. hPa: 1000
Supply-pump pressure bar: 4,4...5,0

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 1500

Charge press. hPa: 1000
Supply-pump pressure bar: 5,1...5,8

KSB solenoid-operated
valve volt: 12,0

4th speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump pressure bar: 6,5...7,1

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0

Overflow : 41...83
quantity cm³/10s: (26...98)

2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0

Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting point hPa: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³: 54,5...55,5
1000H.: (52,0...58,0)

2nd speed 1/min: 2550
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³: 10,0...16,0
1000H.: (10,0...16,0)

3rd speed 1/min: 2425
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³: 24,0...30,0
1000H.: (23,0...31,0)

4th speed 1/min: 2300
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³: 34,5...41,5
1000H.: (33,5...42,5)

5th speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³: 51,3...53,7
1000H.: (50,2...54,8)

6th speed 1/min: 1500
 Charge press. hPa: 1000
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 62,0...63,0
 1000H.: (60,2...64,8)

7th speed 1/min: 800
 Charge press. hPa: 1000
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 58,5...61,5
 1000H.: -

8th speed 1/min: 800
 Charge press. hPa: 500
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 54,5...55,5
 1000H.: (52,0...58,0)

9th speed 1/min: 800
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 40,5...43,5
 1000H.: -

10th speed 1/min: 600
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 40,5...41,5
 1000H.: (38,7...43,3)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 290
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 290
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 13,5...17,5
 1000H.: (11,5...19,5)

2nd speed 1/min: 320
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 7,0...13,0
 1000H.: (6,5...13,5)

3rd speed 1/min: 380
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...2,6
 1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 250
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: -
 ind. 1000H.: 54,0

2nd speed 1/min: 400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: -
 max. 1000H.: 53,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
 K mm : 3,2...3,4
 KF mm : 5,6...6,0
 MS mm : 0,8...1,2

Remarks:
 Operate control lever after each
 manifold-pressure compensator pressure
 change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 2,3M6
Edition : 18.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/10F2100 L297-1
Type number : 0 460 404 056

Customer-specific information
Customer : OPEL

Engine : 2,3 YDT

Power k: 74

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC) : -

Indicator setting:
Piston stroke mm: 1,0
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 5,1...5,5

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 5,1...5,7
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 62,0...63,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 3,0
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del.quantity cm3/
1000H.: 40,5...41,5
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 290
Del.quantity cm3/
1000H.: 13,5...17,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2425
Charge press. hPa: 1000
Del.quantity cm3/
1000H: 24,0...30,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 52,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
TD travel mm: 2,7...4,3
mm: (2,3...4,7)

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 3,8...6,2
mm: (3,2...6,8)

KSB solenoid-operated
valve volt: -
3rd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 0,0...6,2
mm: (0,0...6,2)

KSB solenoid-operated
valve volt: -
4th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)

KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3,7...4,3
mm: (3,3...4,7)

KSB solenoid-operated
valve volt: 12,0
6th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5,1...5,5
mm: (4,6...6,0)

KSB solenoid-operated
valve volt: 12,0

1st speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 7,4...8,2
mm: (7,1...8,5)

Supply-pump pressure characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
Supply-pump pressure bar: 4,2...4,8
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1200
Charge press. hPa: 1000

Supply-pump pressure bar: 4,4...5,0
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump pressure bar: 5,1...5,7
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump pressure bar: 6,5...7,1
KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting point hPa: 500
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 54,5...55,5
1000H.: (52,0...58,0)
2nd speed 1/min: 2550
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 10,0...16,0
1000H.: (10,0...16,0)
3rd speed 1/min: 2450
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 24,0...30,0
1000H.: (23,0...31,0)
4th speed 1/min: 2300
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 34,5...41,5
1000H.: (33,5...42,5)
5th speed 1/min: 2100

Charge press. hPa: 1000
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 51,3...53,7
 1000H.: (50,2...54,8)
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 62,0...63,0
 1000H.: (60,2...64,8)
 7th speed 1/min: 800
 Charge press. hPa: 1000
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 58,5...61,5
 1000H.: -
 8th speed 1/min: 800
 Charge press. hPa: 500
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 54,5...55,5
 1000H.: (52,0...58,0)
 9th speed 1/min: 800
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 40,5...43,5
 1000H.: -
 10th speed 1/min: 600
 Charge press. hPa: -
 Del.quantity cm3/: 40,5...41,5
 1000H.: (38,7...43,3)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 290
 ELAB volt: -
 Del.quantity cm3/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 290
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 13,5...17,5
 1000H.: (11,5...19,5)
 2nd speed 1/min: 320
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 7,0...13,0
 1000H.: (6,5...13,5)
 3rd speed 1/min: 380
 KSB solenoid-operated
 valve volt: 12,0

Del.quantity cm3/: 0,0...2,6
 1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 250
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: -
 ind. 1000H.: 54,0

2nd speed 1/min: 400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: -
 max. 1000H.: 50,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 0,8...1,2

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 2,3M7
Edition : 18.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/10F2100 L297-2
Type number : 0 460 404 057

Customer-specific information
Customer : OPEL

Engine : 2,3 YDT

Power k: 74

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1,0
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 5,1...5,5

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 5,1...5,7
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 62,0...63,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 3,0
1000H.: (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del.quantity cm3/
1000H.: 40,5...41,5
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 290
Del.quantity cm3/
1000H.: 13,5...17,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/ : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2425
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 24,0...30,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 52,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
TD travel mm: 2,7...4,3
mm: (2,3...4,7)

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 3,8...6,2
mm: (3,2...6,8)

KSB solenoid-operated
valve volt: -
3rd speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 0,0...6,2
mm: (0,0...6,2)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 800
Charge press. hPa: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)

KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 1200
Charge press. hPa: 1000
TD travel mm: 3,7...4,3
mm: (3,3...4,7)

KSB solenoid-operated
valve volt: 12,0
6th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 5,1...5,5
mm: (4,6...6,0)

KSB solenoid-operated
valve volt: 12,0
1st speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 7,4...8,2
mm: (7,1...8,5)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 300
Charge press. hPa: 1000
Supply-pump
pressure bar: 4,2...4,8
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1200

Charge press. hPa: 1000
Supply-pump
pressure bar: 4,4...5,0
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 5,1...5,7
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 6,5...7,1

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800
Charge-air pressure-setting
point hPa: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 48,5...49,5
1000H.: (46,0...52,0)
2nd speed 1/min: 2550
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 10,0...16,0
1000H.: (10,0...16,0)
3rd speed 1/min: 2425
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 24,0...30,0
1000H.: (23,0...31,0)
4th speed 1/min: 2300
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 34,5...41,5
1000H.: (33,5...42,5)
5th speed 1/min: 2100
Charge press. hPa: 1000

KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 51,3...53,7
 1000H.: (50,2...54,8)
 6th speed 1/min: 1500
 Charge press. hPa: 1000
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 62,0...63,0
 1000H.: (60,2...64,8)
 7th speed 1/min: 800
 Charge press. hPa: 1000
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 58,5...61,5
 1000H.: -
 8th speed 1/min: 800
 Charge press. hPa: 500
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 48,5...49,5
 1000H.: (46,0...52,0)
 9th speed 1/min: 800
 Charge press. hPa: -
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 40,5...43,5
 1000H.: -
 10th speed 1/min: 600
 Charge press. hPa: -
 Del.quantity cm3/: 40,5...41,5
 1000H.: (38,7...43,3)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 290
 ELAB volt: -
 Del.quantity cm3/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 290
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 13,5...17,5
 1000H.: (11,5...19,5)
 2nd speed 1/min: 320
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 7,0...13,0
 1000H.: (6,5...13,5)
 3rd speed 1/min: 380
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: 0,0...2,6
 1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 250
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: -
 ind. 1000H.: 54,0

2nd speed 1/min: 400
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm3/: -
 max. 1000H.: 53,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
 K mm : 3,2...3,4
 KF mm : 5,6...6,0
 MS mm : 0,8...1,2

Remarks:
 Operate control lever after each
 manifold-pressure compensator pressure
 change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 2,5A
Edition : 12.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 5/10F2150 L189
Type number : 0 460 405 035
Customer Part-No. :

Customer-specific information
Customer : MOTORI VM

Engine : HR 588 HT

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0.35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,2
(from BDC) : $\pm 0,02$ (0,04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1600
Charge press. hPa: 1000
Setting value mm: 4,8...5,2

Supply-pump pressure:

Speed 1/min: 1600
Charge press. hPa: 1000

F06

Setting value bar: 6,2...6,8

Full-load del. with charge press.:

Speed 1/min: 1600
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 45,0...46,0
Dispersion cm³/
1000H.: (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del. quantity cm³/
1000H.: 38,0...39,0

Low-idle speed regulation:

Speed 1/min: 400
Del. quantity cm³/
1000H.: 13,0...17,0
Dispersion cm³/
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2400
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 13,0...19,0

Start:

Speed 1/min: 100
Del. quantity : 24,0...44,0
mind cm³/1000H.: -

Load-dependent start of delivery:

Speed 1/min: 1600
Charge press. hPa: 1000

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 1,2...2,0
mm: (0,9...2,5)
2nd speed 1/min: 1600
Charge press. hPa: 1000
TD travel mm: 4,8...5,2
mm: (4,3...5,7)
3rd speed 1/min: 2150
Charge press. hPa: 1000

TD travel mm: 7,1...7,9
mm: (6,8...8,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump pressure bar: 2,8...3,4
2nd speed 1/min: 1600
Charge press. hPa: 1000
Supply-pump pressure bar: 6,2...6,8
3rd speed 1/min: 2150
Charge press. hPa: 1000
Supply-pump pressure bar: 8,1...8,7

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: -
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2150
Charge press. hPa: 1000
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 500
LDA stroke mm: 6,5
Del.quantity cm3/: 42,0...43,0
1000H.: (40,3...44,7)
2nd speed 1/min: 2500
Charge press. hPa: 1000
Del.quantity cm3/: 0,0...5,0
1000H.: (0,0...5,0)
3rd speed 1/min: 2400
Charge press. hPa: 1000
Del.quantity cm3/: 13,0...19,0
1000H.: (12,0...20,0)
4th speed 1/min: 2300
Charge press. hPa: 1000
Del.quantity cm3/: 26,5...33,5
1000H.: (26,0...34,0)
5th speed 1/min: 2150
Charge press. hPa: 1000
Del.quantity cm3/: 38,5...41,5
1000H.: (37,8...42,2)
6th speed 1/min: 1600
Charge press. hPa: 1000
Del.quantity cm3/: 45,0...46,0
1000H.: (43,3...47,7)
7th speed 1/min: 700
Charge press. hPa: 500

Del.quantity cm3/: 42,0...43,0
1000H.: (40,3...44,7)
8th speed 1/min: 600
Charge press. hPa: -
Del.quantity cm3/: 38,0...39,0
1000H.: (36,3...40,7)
9th speed 1/min: 600
Charge press. hPa: 1000
Del.quantity cm3/: 44,2...47,2
1000H.: (42,7...48,7)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 2150
ELAB volt: -
Del.quantity cm3/: -
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
Del.quantity cm3/: 13...17
1000H.: (11,0...19,0)
2nd speed 1/min: 500
Del.quantity cm3/: 1,0...7,0
1000H.: (0,0...8,0)
3rd speed 1/min: 800
Del.quantity cm3/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

3rd speed 1/min: 400
Del.quantity cm3/: 32,0...52,0
1000H.: -
4th speed 1/min: 500
Del.quantity cm3/: 29,0...49,0
1000H.: -

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

KF mm : 5,8...6,2
MS mm : 0,6...1,0
SVS max. mm : 2,7

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2,4S4
Edition : 20.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/10F2125 L271
Type number : 0 460 406 055

Customer-specific information
Customer : VW

Engine : 087T-LT

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC) : -

Indicator setting:
Piston stroke mm : 1,0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 750
Setting value bar: 5,5...6,1

Full-load del. with charge press.:

Speed 1/min: 1500
Charge press. hPa: 750
Del.quantity cm3/
1000H.: 41,5...42,5
Dispersion cm3/ : 2,5
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600
Del.quantity cm3/
1000H.: 23,0...24,0

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 6,0...10,0
Dispersion cm3/ : 2,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2425
Charge press. hPa: 750
Del.quantity cm3/
1000H: 14,0...18,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 35,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
Charge press. hPa: 750
TD travel mm: 0,5...1,3
mm: (0,2...1,6)
2nd speed 1/min: 1500
Charge press. hPa: 750
TD travel mm: 2,3...2,7
mm: (1,8...3,2)
3rd speed 1/min: 2125
Charge press. hPa: 750
TD travel mm: 4,3...5,1
mm: (4,0...5,4)

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Charge press. hPa: 750
 Supply-pump pressure bar: 3,1...3,7
 bar: (2,9...3,9)
 2nd speed 1/min: 1500
 Charge press. hPa: 750
 Supply-pump pressure bar: 5,5...6,1
 bar: (5,3...6,3)
 3rd speed 1/min: 2125
 Charge press. hPa: 750
 Supply-pump pressure bar: 7,1...7,7
 bar: (6,9...7,9)

Overflow quantity at overflow valve:

1st speed 1/min: 600
 Charge press. hPa: -
 Overflow quantity cm³/10s: 41...83
 (26...98)
 2nd speed 1/min: 2125
 Charge press. hPa: 750
 Overflow quantity cm³/10s: 55...138
 (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750
 Charge-air pressure-setting point hPa: 300
 LDA stroke mm: 6,8
 Del. quantity cm³/: 32,0...33,0
 1000H.: (29,5...35,5)
 2nd speed 1/min: 2600
 Charge press. hPa: 750
 Del. quantity cm³/: 0,0...6,0
 1000H.: (0,0...6,0)
 3rd speed 1/min: 2425
 Charge press. hPa: 750
 Del. quantity cm³/: 14,0...18,0
 1000H.: (12,0...20,0)
 4th speed 1/min: 2325
 Charge press. hPa: 750
 Del. quantity cm³/: 24,0...34,0
 1000H.: (23,0...35,0)
 5th speed 1/min: 2125
 Charge press. hPa: 750
 Del. quantity cm³/: 35,5...37,5
 1000H.: (34,3...38,7)
 6th speed 1/min: 1500
 Charge press. hPa: 750
 Del. quantity cm³/: 41,5...42,5
 1000H.: (39,8...44,2)
 7th speed 1/min: 750
 Charge press. hPa: 300
 Del. quantity cm³/: 32,0...33,0
 1000H.: (29,5...35,5)

8th speed 1/min: 600
 Charge press. hPa: 750
 Del. quantity cm³/: 38,0...41,0
 1000H.: (36,5...42,5)
 9th speed 1/min: 600
 Charge press. hPa: -
 Del. quantity cm³/: 23,0...24,0
 1000H.: (20,5...26,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2125
 Del. quantity cm³/: 0..3
 1000H.: -

Electr. shutoff:

Speed 1/min: 375
 ELAB volt: -
 Del. quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
 Del. quantity cm³/: 6,0...10,0
 1000H.: (4,0...12,0)
 2nd speed 1/min: 450
 Del. quantity cm³/: 0,0...3,0
 1000H.: (0,0...3,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
 Del. quantity cm³/: -
 ind. 1000H: 30,0

2nd speed 1/min: 500
 Del. quantity cm³/: -
 max. 1000H: 30,0

Shutoff electromagnet:

Cut-in
 min. voltage : 10,0
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
 K mm : 3,2...3,4
 KF mm : 6,2...6,6
 MS mm : 0,9...1,3
 SVS max. mm : 3,9

Remarks:

Operate control lever after each

manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CAS 5,9C
Edition : 21.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/10F1150 R287
Type number : 0 460 406 056

Customer-specific information
Customer : CASE

Engine : D 358-1056

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC) : -

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800
Setting value mm: 5,8...6,2

Supply-pump pressure:

Speed 1/min: 800
Setting value bar: 5,3...5,9

Full-load del. w/out charge press.:

Speed 1/min : 800
Del.quantity cm3/
1000H.: 72,5...73,5
Dispersion cm3/ : 3,0
1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 350
Del.quantity cm3/
1000H.: 18,0...22,0
Dispersion cm3/ : 3,0
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1200
Del.quantity cm3/
1000H.: 49,0...55,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,6...3,4
mm: (2,1...3,5)
2nd speed 1/min: 800
TD travel mm: 5,8...6,2
mm: (4,9...6,3)
3rd speed 1/min: 1000
TD travel mm: 6,9...7,7
mm: (6,4...7,8)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 4,0...4,6
2nd speed 1/min: 800
Supply-pump
pressure bar: 5,3...5,9
3rd speed 1/min: 1000
Supply-pump
pressure bar: 6,1...6,7

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1350
Del.quantity cm3/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1300
Del.quantity cm3/: 0,0...10,0
1000H.: (0,0...10,0)
3rd speed 1/min: 1255
Del.quantity cm3/: 10,0...40,0
1000H.: (10,0...40,0)
4th speed 1/min: 1200
Del.quantity cm3/: 49,0...55,0
1000H.: (47,5...56,5)
5th speed 1/min: 1100
Del.quantity cm3/: 76,5...79,5
1000H.: (75,5...80,5)
6th speed 1/min: 800
Del.quantity cm3/: 72,5...73,5
1000H.: (70,7...75,3)
7th speed 1/min: 500
Del.quantity cm3/: 71,0...75,0
1000H.: (70,0...76,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del.quantity cm3/: 0..3
1000H.: -

Idle delivery:

1st speed 1/min: 350
Del.quantity cm3/: 18,0...22,0
1000H.: (16,0...24,0)
2nd speed 1/min: 450
Del.quantity cm3/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 350
Del.quantity cm3/: -
ind. 1000H: 80,0
2nd speed 1/min: 450
Del.quantity cm3/: -
max. 1000H : 80,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 1,4...1,6
SVS max.	mm	: 1,6
XK	mm	: 20,2...22,2
XL	mm	: 12,1...15,5

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ONA 3,4C
Edition : 13.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/10F 1500R 209-2
Type number : O 460 406 060
Customer Part-No. :

Customer-specific information
Customer : ONAN

Engine : L634TA HD

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,2
(from BDC) : +-0,02 (0,04)

Indicator setting:
Piston stroke mm : 1,0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1400
Charge press. hPa: 800
Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1400
Charge press. hPa: 800
Setting value bar: 4,8...5,4

Full-load del. with charge press.:

Speed 1/min: 1100
Charge press. hPa: 800
Del. quantity cm³/
1000H.: 61,0...62,0
Dispersion cm³/ : 3,0
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 700
Del. quantity cm³/
1000H.: 44,5...45,5

Low-idle speed regulation:

Speed 1/min: 400
Del. quantity cm³/
1000H.: 14,0...18,0
Dispersion cm³/ : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 1580
Charge press. hPa: 800
Del. quantity cm³/
1000H: 35,0...39,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 42,0

Load-dependent start of delivery:

Speed 1/min: 1100
Charge press. hPa: 800

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
Charge press. hPa: 800
TD travel mm: 1,4...2,2
mm: (1,1...2,5)
2nd speed 1/min: 1100
Charge press. hPa: 800

TD travel mm: 2,7...3,3
mm: (2,3...3,7)
3rd speed 1/min: 1400
Charge press. hPa: 800
TD travel mm: 4,3...4,7
mm: (3,8...5,2)

Supply-pump pressure characteristic:

1st speed 1/min: 700
Charge press. hPa: 800
Supply-pump pressure bar: 2,3...2,9
2nd speed 1/min: 1100
Charge press. hPa: 800
Supply-pump pressure bar: 3,8...4,4
3rd speed 1/min: 1400
Charge press. hPa: 800
Supply-pump pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 700
Charge press. hPa: 800
Overflow quantity cm³/10s: 41...83
(26...98)
2nd speed 1/min: 1500
Charge press. hPa: 800
Overflow quantity cm³/10s: 55...138
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700
Charge-air pressure-setting point hPa: 200
LDA stroke mm: 6,5
Del. quantity cm³/: 47,0...48,0
1000H.: (45,2...49,8)
2nd speed 1/min: 1700
Charge press. hPa: 800
Del. quantity cm³/: 0,0...6,00
1000H.: -
3rd speed 1/min: 1640
Charge press. hPa: 800
Del. quantity cm³/: 8,0...16,0
1000H.: -
4th speed 1/min: 1580
Charge press. hPa: 800
Del. quantity cm³/: 35,0...39,0
1000H.: (33,0...41,0)
5th speed 1/min: 1500
Charge press. hPa: 800
Del. quantity cm³/: 54,5...57,5
1000H.: (53,7...58,3)
6th speed 1/min: 1100
Charge press. hPa: 800

Del. quantity cm³/: 61,0...62,0
1000H.: (59,2...63,8)
7th speed 1/min: 700
Charge press. hPa: 800
Del. quantity cm³/: 58,0...61,0
1000H.: -
8th speed 1/min: 700
Charge press. hPa: 200
Del. quantity cm³/: 47,0...48,0
1000H.: (45,2...49,8)
9th speed 1/min: 700
Charge press. hPa: -
Del. quantity cm³/: 44,5...45,5
1000H.: (42,7...47,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1500
Del. quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 350
ELAB volt: -
Del. quantity cm³/: 0,0 3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350
Del. quantity cm³/: 26,5...33,5
1000H.: -
2nd speed 1/min: 400
Del. quantity cm³/: 14,0...18,0
1000H.: (12,0...20,0)
3rd speed 1/min: 450
Del. quantity cm³/: 0,0...6,0
1000H.: (0,0...3,0)

Automatic starting fuel delivery:

1st speed 1/min: 220
Del. quantity cm³/: -
ind. 1000H: 42,0
2nd speed 1/min: 300
Del. quantity cm³/: -
max. 1000H : 42,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

KF	mm	: 5,6...6,0
MS	mm	: 0,6...1,0
SVS max.	mm	: 2,1

Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE 2,6K4
Edition : 15.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 3/11F1200 R263-2
Type number : 0 460 413 008
Customer Part-No. :

Customer-specific information
Customer : STEYR

Engine : WD311-47/48

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC) : -

Indicator setting:
Piston stroke mm: 1,0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000
Setting value mm: 5,4...5,8

Supply-pump pressure:

Speed 1/min: 1000
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm3/
1000H.: 57,5...58,5
Dispersion cm3/: 3,5
1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 300
Del.quantity cm3/
1000H.: 14,0...18,0
Dispersion cm3/: 3,5
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1300
Del.quantity cm3/
1000H.: 8,0...14,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 0,7...1,5
mm: (0,4...1,8)
2nd speed 1/min: 1000
TD travel mm: 5,4...5,8
mm: (4,9...6,3)
3rd speed 1/min: 1200
TD travel mm: 6,7...7,5
mm: (6,4...7,8)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,6...4,2
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5,6...6,2
3rd speed 1/min: 1200
Supply-pump
pressure bar: 6,5...7,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1200
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1330
Del. quantity cm³/: 0,0...2,6
1000H.: (0,0...2,6)
2nd speed 1/min: 1300
Del. quantity cm³/: 8,0...14,0
1000H.: (7,0...15,0)
3rd speed 1/min: 1250
Del. quantity cm³/: 33,0...41,0
1000H.: (32,0...42,0)
4th speed 1/min: 1200
Del. quantity cm³/: 53,0...56,0
1000H.: (51,7...56,3)
5th speed 1/min: 1000
Del. quantity cm³/: 57,5...58,5
1000H.: (55,7...60,3)
6th speed 1/min: 800
Del. quantity cm³/: 56,0...59,0
1000H.: -
7th speed 1/min: 500
Del. quantity cm³/: 49,5...52,5
1000H.: (48,5...53,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1200
Del. quantity cm³/: 0..3
1000H.: -

Idle delivery:

1st speed 1/min: 300
Del. quantity cm³/: 14,0...18,0
1000H.: (12,0...20,0)
2nd speed 1/min: 330
Del. quantity cm³/: 5,0...11,0
1000H.: (4,0...12,0)
3rd speed 1/min: 400
Del. quantity cm³/: 0,0...2,6
1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 170
Del. quantity cm³/: -
ind. 1000H: 75,0

2nd speed 1/min: 250

F18

Del. quantity cm³/: -
max. 1000H : 46,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 1,2...1,6
SVS max.	mm	: 4,1
XK	mm	: 17,0...19,0
XL	mm	: 11,7...15,1

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE 2,4 A
Edition : 19.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 3/11F1200 R263-3
Type number : 0 460 413 009

Customer-specific information
Customer : STEYR

Engine : WD308-46

Power k: 34

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1,0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000
Setting value mm: 6,1...6,5

Supply-pump pressure:

Speed 1/min: 1000
Setting value bar: 5,9...6,5

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm3/
1000H.: 67,0...68,0
Dispersion cm3/: 3,5
1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 300
Del.quantity cm3/
1000H.: 17,0...21,0
Dispersion cm3/: 3,5
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1280
Del.quantity cm3/
1000H.: 22,0...28,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 80,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 3,9...4,5
mm: (1,1...2,5)
2nd speed 1/min: 1000
TD travel mm: 5,9...6,5
mm: (5,6...7,0)
3rd speed 1/min: 1200
TD travel mm: 6,8...7,6
mm: (6,5...7,9)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 3,9...4,5
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5,9...6,5
3rd speed 1/min: 1200
Supply-pump
pressure bar: 6,7...7,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1180
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1350
Del.quantity cm3/: 0,0...2,6
1000H.: (0,0...2,6)
2nd speed 1/min: 1280
Del.quantity cm3/: 22,0...28,0
1000H.: (21,0...29,0)
3rd speed 1/min: 1250
Del.quantity cm3/: 37,0...45,0
1000H.: (36,0...46,0)
4th speed 1/min: 1180
Del.quantity cm3/: 66,0...69,0
1000H.: (65,2...69,8)
5th speed 1/min: 1000
Del.quantity cm3/: 67,0...68,0
1000H.: (65,2...69,8)
6th speed 1/min: 800
Del.quantity cm3/: 65,0...69,0
1000H.: -
7th speed 1/min: 500
Del.quantity cm3/: 62,5...65,5
1000H.: (61,5...66,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1200
Del.quantity cm3/: 0..3
1000H.: -

Idle delivery:

1st speed 1/min: 300
Del.quantity cm3/: 17,0...21,0
1000H.: (15,0...23,0)
2nd speed 1/min: 330
Del.quantity cm3/: 9,0...15,0
1000H.: (8,0...16,0)
3rd speed 1/min: 400
Del.quantity cm3/: 0,0...2,6
1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 170
Del.quantity cm3/: -
ind. 1000H: 85,0

2nd speed 1/min: 250

F20

Del.quantity cm3/: -
max. 1000H : 65,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 1,2...1,6
SVS max.	mm	: 4,1

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 4,0 A
Edition : 21.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2000 R290
Type number : 0 460 414 053

Customer-specific information
Customer : PERKINS

Engine : PRIMA 4000NA

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC) : -

Indicator setting:
Piston stroke mm: 1.37
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1800
Setting value mm: 3,2...3,6
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1800
Setting value bar: 6,2...6,8
KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 500
Del.quantity cm3/
1000H.: 19,0...20,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 4,0
1000H.: (4,0)

Low-idle speed regulation:

Speed 1/min: 400
Del.quantity cm3/
1000H.: 8,0...10,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2150
Del.quantity cm3/
1000H.: 23,5...25,5
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 55,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 2,3...2,5
mm: (1,6...3,2)
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1200
TD travel mm: 2,1...4,1
mm: (1,9...5,3)
KSB solenoid-operated
valve volt: -
3rd speed 1/min: 1500
TD travel mm: 1,6...2,4
mm: (1,3...2,7)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1800
TD travel mm: 3,2...3,6
mm: (2,7...4,1)
KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 2000
TD travel mm: 3,7...4,5
mm: (3,4...4,8)
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 1000
Supply-pump
pressure bar: 4,3...4,9
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 1800
Supply-pump
pressure bar: 6,2...6,8
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6,8...7,4
KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2000
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...15,0
1000H.: (0,0...15,0)
2nd speed 1/min: 2150
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 23,5...25,5
1000H.: (20,5...28,5)
3rd speed 1/min: 2000
KSB solenoid-operated
valve volt: 12,0

Del.quantity cm³/: 56,0...61,0
1000H.: (55,0...62,0)
4th speed 1/min: 1000
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 42,8...43,8
1000H.: (40,8...45,8)
5th speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 19,0...20,0
1000H.: (14,5...24,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2000
Del.quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 400
ELAB volt: 12,0
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 8,0...10,0
1000H.: (5,0...13,0)
2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 1,0...7,0
1000H.: -

Automatic starting fuel delivery:

2nd speed 1/min: 450
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H.: 40,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4

KF	mm	: 5,0...5,4
MS	mm	: 1,1...1,5
SVS max.	mm	: 5,7

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 2,5A
Edition : 21.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2100 R286
Type number : 0 460 414 056

Customer-specific information
Customer : FIAT-AUTO

Engine : M711 AT 19.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate,
diameter mm : 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 6,6...7,0

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 7,3...7,9
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 47,3...48,3
KSB solenoid-operated
valve volt : 12,0
Dispersion cm³ / : 3,0
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 750
Del. quantity cm³/
1000H.: 23,3...24,3
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 450
Del. quantity cm³/
1000H.: 6,0...10,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ / : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2400
Charge press. hPa: 1000
Del. quantity cm³/
1000H: 17,0...23,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 40,0

Load-dependent start of delivery:

Speed 1/min: 1750
Charge press. hPa: 1000

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450
Charge press. hPa: 1000
TD travel mm: 3,3...3,5
mm: (2,4...4,4)
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 3,2...5,2
mm: (3,0...5,4)
KSB solenoid-operated
valve volt: -
3rd speed 1/min: 750
Charge press. hPa: 1000
TD travel mm: 2,3...3,1
mm: (2,0...3,4)
KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 6,6...7,0
mm: (6,3...7,3)
KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 8,9...9,7
mm: (8,6...10,0)
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure bar: 5,2...5,8
KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 7,3...7,9
KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 8,4...9,0
KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750
Charge-air pressure-setting
point hPa: 400
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 32,5...33,5
1000H.: (30,5...35,5)
2nd speed 1/min: 2500
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 0,0...6,0
1000H.: -
3rd speed 1/min: 2400
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 17,0...23,0
1000H.: (16,0...24,0)
4th speed 1/min: 2300
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 27,0...35,0
1000H.: -
5th speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 45,5...48,5
1000H.: (44,5...49,5)
6th speed 1/min: 1750
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 47,3...48,3
1000H.: (45,8...49,8)
7th speed 1/min: 750
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 49,8...53,8
1000H.: -
8th speed 1/min: 750
Charge press. hPa: 720

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 49,8...53,8
1000H: -
9th speed 1/min: 750
Charge press. hPa: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 32,5...33,5
1000H: (30,5...35,5)
10th speed 1/min: 750
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 23,3...24,3
1000H: (21,3...26,3)
11th speed 1/min: 600
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 17,5...20,5
1000H: -

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 450
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 450
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 6,0...10,0
1000H.: (4,0...12,0)
2nd speed 1/min: 600
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 0,0...3,0
1000H.: -
3rd speed 1/min: 800
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 0,0...2,4
1000H.: -

Automatic starting fuel delivery:

2nd speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
max. 1000H : 55,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation		
K.	mm	: 3,2...3,4
KF	mm	: -
MS	mm	: 0,6...1,0
SVS max.	mm	: 1,8
XK	mm	: 17,0...19,0
XL	mm	: 10,3...13,7

Remarks:

Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 2,5A1
Edition : 21.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/11F2100 R286-1
Type number : 0 460 414 059

Customer-specific information
Customer : FIAT-AUTO

Engine : M711 AT 19.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm : 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value mm: 6,6...7,0

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500
Charge press. hPa: 1000
Setting value bar: 7,3...7,9
KSB solenoid-operated
valve volt: 12,0

Full-load del. with charge press.:

Speed 1/min: 1750
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 47,3...48,3
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ / : 3,0
1000H.: (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 750
Del. quantity cm³/
1000H.: 23,3...24,3
KSB solenoid-operated
valve volt: 12,0

Low-idle speed regulation:

Speed 1/min: 450
Del. quantity cm³/
1000H.: 6,0...10,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm³ / : 3,0
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2400
Charge press. hPa: 1000
Del. quantity cm³/
1000H.: 17,0...23,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del. quantity : -
mind cm³/1000H.: 40,0

Load-dependent start of delivery:

Speed 1/min: 1750
Charge press. hPa: 1000

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 450
Charge press. hPa: 1000
TD travel mm: 3,3...3,5
mm: (2,4...4,4)

KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000
Charge press. hPa: 1000
TD travel mm: 3,2...5,2
mm: (3,0...5,4)

KSB solenoid-operated
valve volt: -
3rd speed 1/min: 750
Charge press. hPa: 1000
TD travel mm: 2,3...3,1
mm: (2,0...3,4)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 1500
Charge press. hPa: 1000
TD travel mm: 6,6...7,0
mm: (6,3...7,3)

KSB solenoid-operated
valve volt: 12,0
5th speed 1/min: 2100
Charge press. hPa: 1000
TD travel mm: 8,9...9,7
mm: (8,6...10,0)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Charge press. hPa: 1000
Supply-pump
pressure bar: 5,2...5,8

KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 1500
Charge press. hPa: 1000
Supply-pump
pressure bar: 7,3...7,9

KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 2100
Charge press. hPa: 1000
Supply-pump
pressure bar: 8,4...9,0

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
Charge press. hPa: 1000

KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 750
Charge-air pressure-setting
point hPa: 400
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 32,5...33,5
1000H.: (30,5...35,5)

2nd speed 1/min: 2500
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 0,0...6,0
1000H.: -

3rd speed 1/min: 2400
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 17,0...23,0
1000H.: (16,0...24,0)

4th speed 1/min: 2300
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 27,0...35,0
1000H.: -

5th speed 1/min: 2100
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 45,5...48,5
1000H.: (44,5...49,5)

6th speed 1/min: 1750
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 47,3...48,3
1000H.: (45,8...49,8)

7th speed 1/min: 750
Charge press. hPa: 1000
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 49,8...53,8
1000H.: -

8th speed 1/min: 750
Charge press. hPa: 720
KSB solenoid-operated
valve volt: 12,0

Del.quantity cm3/: 49,8...53,8
1000H: -
9th speed 1/min: 750
Charge press. hPa: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 32,5...33,5
1000H: (30,5...35,5)
10th speed 1/min: 750
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 23,3...24,3
1000H: (21,3...26,3)
11th speed 1/min: 600
Charge press. hPa: -
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 17,5...20,5
1000H: -

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 450
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 450
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 6,0...10,0
1000H.: (4,0...12,0)
2nd speed 1/min: 600
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 0,0...3,0
1000H.: -
3rd speed 1/min: 800
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 0,0...2,4
1000H.: -

Automatic starting fuel delivery:

2nd speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
max. 1000H : 55,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : -
MS mm : 0,6...1,0
XK mm : 17,0...19,0
XL mm : 10,3...13,7

Remarks:

Operate control lever after each
manifold-pressure compensator pressure
change.

Correction at adjusting nut (46)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5,5P2
Edition : 13.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/11F1500 R196-1
Type number : O 460 416 063
Customer Part-No. :

Customer-specific information
Customer : IVECO-FIAT

Engine : 8060.05.206

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 020

Opening
pressure bar : 172...175

Perforated-plate
diameter mm : 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC) : -

Indicator setting:
Piston stroke mm : 1,0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000

G02

Setting value mm: 3,2...3,6

Supply-pump pressure:

Speed 1/min: 1000
Setting value bar: 5,4...6,0

Full-load del. w/out charge press.:

Speed 1/min : 1300
Del.quantity cm3/
1000H.: 61,5...62,5
Dispersion cm3/: 3,5
1000H.: (4,0)

Low-idle speed regulation:

Speed 1/min: 325
Del.quantity cm3/
1000H.: 8,0...12,0
Dispersion cm3/: 3,0
1000H.: (4,0)

Full-load speed regulation:

Speed 1/min: 1650
Del.quantity cm3/
1000H.: 37,0...43,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 65,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 700
TD travel mm: 0,5...1,3
mm: (0,2...1,6)
2nd speed 1/min: 1000
TD travel mm: 3,2...3,6
mm: (2,7...4,1)
3rd speed 1/min: 1400
TD travel mm: 6,2...7,0
mm: (5,9...7,3)

Supply-pump pressure characteristic:

1st speed 1/min: 700
Supply-pump
pressure bar: 4,2...4,8
2nd speed 1/min: 1000
Supply-pump
pressure bar: 5,4...6,0
3rd speed 1/min: 1500

Supply-pump
pressure bar: 7,2...7,8

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1500
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1730
Del. quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1650
Del. quantity cm³/: 37,0...43,0
1000H.: (35,0...44,5)
3rd speed 1/min: 1600
Del. quantity cm³/: 46,0...54,0
1000H.: (45,0...55,0)
4th speed 1/min: 1500
Del. quantity cm³/: 58,0...61,0
1000H.: (56,5...62,5)
5th speed 1/min: 1300
Del. quantity cm³/: 61,5...62,5
1000H.: (59,5...64,5)
6th speed 1/min: 750
Del. quantity cm³/: 59,0...62,0
1000H.: (57,5...63,5)
7th speed 1/min: 600
Del. quantity cm³/: 51,5...55,5
1000H.: (50,0...57,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1500
Del. quantity cm³/: 0..3
1000H.: -

Electr. shutoff:

Speed 1/min: 325
ELAB volt: -
Del. quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 325
Del. quantity cm³/: 8,0...12,0
1000H.: (6,0...14,0)
2nd speed 1/min: 450
Del. quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)

Automatic starting fuel delivery:

1st speed 1/min: 200
Del. quantity cm³/: -
ind. 1000H: 75,0

2nd speed 1/min: 300
Del. quantity cm³/: -
max. 1000H : 40,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,6...6,0
MS mm : 1,8...2,2
SVS max. mm : 5,9
XK mm : 17,0...19,0
XL mm : 10,6...14,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,8W1
Edition : 14.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1000 R225-15
Type number : 0 460 426 093
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6BT- 5.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC): +-0,02

Indicator setting:
Piston stroke mm: 1.5
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

604

Setting value mm: 3,5...3,9

Supply-pump pressure:

Speed 1/min: 750
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min : 900
Del.quantity cm3/
1000H.: 72,0...73,0
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 8,0...14,0
Dispersion cm3/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1040
Del.quantity cm3/
1000H: 53,5...59,5

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 60,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500
TD travel mm: 1,4...2,2
mm: (1,1...2,5)
2nd speed 1/min: 750
TD travel mm: 3,5...3,9
mm: (3,0...4,4)
3rd speed 1/min: 1000
TD travel mm: 4,6...5,4
mm: (4,3...5,7)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,4...3,0
2nd speed 1/min: 750
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 1000

Supply-pump
pressure bar: 4,6...5,2

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1000
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1120
Del.quantity cm³/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1100
Del.quantity cm³/: 0,0...15,0
1000H.: (0,0...15,0)
3rd speed 1/min: 1060
Del.quantity cm³/: 15,0...45,0
1000H.: (15,0...45,0)
4th speed 1/min: 1040
Del.quantity cm³/: 53,5...59,5
1000H.: (50,5...62,5)
5th speed 1/min: 1000
Del.quantity cm³/: 69,5...72,5
1000H.: (68,0...74,0)
6th speed 1/min: 900
Del.quantity cm³/: 72,0...73,0
1000H.: (69,5...75,5)
7th speed 1/min: 750
Del.quantity cm³/: 73,5...77,5
1000H.: (71,5...79,5)
8th speed 1/min: 500
Del.quantity cm³/: 58,5...66,5
1000H.: (65,5...68,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1000
Del.quantity cm³/: 0...3

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375
Del.quantity cm³/: 8,0...14,0
1000H.: (6,0...16,0)
2nd speed 1/min: 450

Del.quantity cm³/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 130
Del.quantity cm³/: -
ind. 1000H.: 60,0

2nd speed 1/min: 240
Del.quantity cm³/: -
max. 1000H.: 60,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
K mm : -
KF mm : 5,0...5,4
MS mm : 0,8...1,2
SVS max. mm : 1,5
XK mm : 18,8...20,8
XL mm : 11,7...15,1

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE 6,SK5
Edition : 19.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R265-1
Type number : 0 460 426 109

Customer-specific information
Customer : STEYR

Engine : WD612.86/89

Power k: 110

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses:

Timing-device travel:

Speed 1/min: 800
Setting value mm: 2,0...2,4

Supply-pump pressure:

Speed 1/min: 800
Setting value bar: 5,5...6,1

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm3/
1000H.: 95,5...96,5
Dispersion cm3/: 3,5
1000H.: (3,5)

Low-idle speed regulation:

Speed 1/min: 300
Del.quantity cm3/
1000H.: 16,0...20,0
Dispersion cm3/: 3,5
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1200
Del.quantity cm3/
1000H.: 17,0...23,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 95,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 0,3...1,1
mm: (0,0...1,4)
2nd speed 1/min: 800
TD travel mm: 2,0...2,4
mm: (1,5...2,9)
3rd speed 1/min: 1100
TD travel mm: 2,8...3,6
mm: (2,5...3,9)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 4,7...5,3
2nd speed 1/min: 800
Supply-pump
pressure bar: 5,5...6,1
3rd speed 1/min: 1100
Supply-pump
pressure bar: 6,7...7,3

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm³/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1250
Del.quantity cm³/: 0,0...2,6
1000H.: -
2nd speed 1/min: 1200
Del.quantity cm³/: 17,0...23,0
1000H.: (16,0...24,0)
3rd speed 1/min: 1140
Del.quantity cm³/: 68,0...76,0
1000H.: (67,0...77,0)
4th speed 1/min: 1100
Del.quantity cm³/: 92,0...95,0
1000H.: (91,2...95,8)
5th speed 1/min: 1000
Del.quantity cm³/: 95,5...96,5
1000H.: (93,7...98,3)
6th speed 1/min: 800
Del.quantity cm³/: 93,5...96,5
1000H.: -
7th speed 1/min: 500
Del.quantity cm³/: 92,5...95,5
1000H.: (91,5...96,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del.quantity cm³/: 0..3
1000H.: -

Idle delivery:

1st speed 1/min: 300
Del.quantity cm³/: 16,0..20,0
1000H.: (14,0..22,0)
2nd speed 1/min: 350
Del.quantity cm³/: 4,5...10,5
1000H.: (3,5...11,5)
3rd speed 1/min: 400
Del.quantity cm³/: 0,0...2,6
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 170
Del.quantity cm³/: -
ind. 1000H: 110,0

2nd speed 1/min: 250

Del.quantity cm³/: -
max. 1000H : 90,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 1,2...5,6
SVS max.	mm	: 5,1
XK	mm	: 17,0...19,0
XL	mm	: 11,8...15,2

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,8w2
Edition : 14.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1100 R225-17
Type number : 0 460 426 118
Customer Part-No. :

Customer-specific information
Customer : CDC

Engine : 6BT- 5.9

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 027

Opening
pressure bar : 250...253

Perforated-plate
diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : 0,3
(from BDC) : +-0,02 (0,04)

Indicator setting:
Piston stroke mm: 1.5
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

608

Setting value mm: 4,2...4,6

Supply-pump pressure:

Speed 1/min: 900
Setting value bar: 4,7...5,3

Full-load del. w/out charge press.:

Speed 1/min : 1000
Del.quantity cm3/
1000H.: 63,2...64,2
Dispersion cm3/: 4,0
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 375
Del.quantity cm3/
1000H.: 9,0...11,0
Dispersion cm3/: 5,5
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1150
Del.quantity cm3/
1000H: 44,3...50,3

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 70,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750
TD travel mm: 2,9...3,7
mm: (2,6...4,0)
2nd speed 1/min: 900
TD travel mm: 4,2...4,6
mm: (3,7...5,1)
3rd speed 1/min: 1100
TD travel mm: 5,5...6,3
mm: (5,2...6,6)

Supply-pump pressure characteristic:

1st speed 1/min: 500
Supply-pump
pressure bar: 2,9...3,5
2nd speed 1/min: 750
Supply-pump
pressure bar: 4,0...4,6
3rd speed 1/min: 900

Supply-pump
pressure bar: 4,7...5,3
4th speed 1/min: 1100
Supply-pump
pressure bar: 5,5...6,1

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 1100
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1240
Del.quantity cm3/: 0,0...3,0
1000H.: (0,0...3,0)
2nd speed 1/min: 1220
Del.quantity cm3/: 0,0...15,0
1000H.: (0,0...15,0)
3rd speed 1/min: 1180
Del.quantity cm3/: 15,0...55,0
1000H.: (0,0...40,0)
4th speed 1/min: 1150
Del.quantity cm3/: 44,3...50,3
1000H.: (41,3...53,3)
5th speed 1/min: 1100
Del.quantity cm3/: 62,0...65,0
1000H.: (60,5...66,5)
6th speed 1/min: 1000
Del.quantity cm3/: 63,2...64,2
1000H.: (60,7...66,7)
7th speed 1/min: 750
Del.quantity cm3/: 78,5...82,5
1000H.: (76,5...84,5)
8th speed 1/min: 500
Del.quantity cm3/: 81,5...91,5
1000H.: (80,5...92,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1100
Del.quantity cm3/: 0...3
1000H.: -

Electr. shutoff:

Speed 1/min: 375
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375

Del.quantity cm3/: 9,0...11,0
1000H.: (5,0...15,0)
2nd speed 1/min: 450
Del.quantity cm3/: 0,0...4,0
1000H.: (0,0...4,0)

Automatic starting fuel delivery:

1st speed 1/min: 270
Del.quantity cm3/: -
ind. 1000H: 90,0
2nd speed 1/min: 400
Del.quantity cm3/: -
max. 1000H : 90,0

Shutoff electromagnet:

Cut-in
min. voltage : 20,0
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	5,0...5,4
MS	mm	:	1,3...1,7
XK	mm	:	18,8...20,8
XL	mm	:	10,9...14,3

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,7P4
Edition : 19.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 8F2300 R308
Type number : 0 460 484 015

Customer-specific information
Customer : FIAT-AUTO

Engine : M708 BA 17.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery

Indicator setting:
Piston stroke mm: 1.0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 5,1...5,5

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 5,3...5,9

Full-load del. w/out charge press.:

Speed 1/min : 1500

Del.quantity cm3/
1000H.: 29,5...30,5
Dispersion cm3/: 2,5
1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 390
Del.quantity cm3/
1000H.: 10,0...14,0
Dispersion cm3/: 2,5
1000H.: (2,5)

Full-load speed regulation:

Speed 1/min: 2500
Del.quantity cm3/
1000H.: 22,0...28,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 37,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 1,6...2,4
mm: (1,3...2,7)
2nd speed 1/min: 1500
TD travel mm: 5,1...5,5
mm: (4,6...6,0)
3rd speed 1/min: 2000
TD travel mm: 7,3...7,9
mm: -
4th speed 1/min: 2300
TD travel mm: 8,6...9,4
mm: (8,3...9,7)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3,1...3,7
2nd speed 1/min: 1500
Supply-pump
pressure bar: 5,3...5,9
3rd speed 1/min: 2300
Supply-pump
pressure bar: 7,2...7,8

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2300
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2900
Del. quantity cm3/: 0,0...1,6
1000H.: (0,0...1,6)
2nd speed 1/min: 2700
Del. quantity cm3/: 3,5...11,5
1000H.: (2,5...12,5)
3rd speed 1/min: 2500
Del. quantity cm3/: 22,0...28,0
1000H.: (21,0...29,0)
4th speed 1/min: 2300
Del. quantity cm3/: 30,8...33,2
1000H.: (29,7...34,3)
5th speed 1/min: 1500
Del. quantity cm3/: 29,5...30,5
1000H.: (27,7...32,3)
6th speed 1/min: 1000
Del. quantity cm3/: 28,8...31,2
1000H.: (27,7...32,3)
7th speed 1/min: 600
Del. quantity cm3/: 29,5...32,5
1000H.: (28,0...34,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 390
ELAB volt: -
Del. quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 390
Del. quantity cm3/: 10,0...14,0
1000H.: (7,0...17,0)
2nd speed 1/min: 440
Del. quantity cm3/: (0,0...6,0
1000H.: (0,0...8,5)
3rd speed 1/min: 500
Del. quantity cm3/: 0,0...3,0
1000H.: (0,0...3,0)

Automatic starting fuel delivery:

1st speed 1/min: 300
Del. quantity cm3/: -
ind. 1000H: 43,0

2nd speed 1/min: 400
Del. quantity cm3/: -
max. 1000H : 42,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,3...5,7
MS	mm	: 1,6...2,0

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,6 E
Edition : 06.07.88
replaces : 28.08.87
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R215
Type number : 0 460 494 174
Customer Part-No. :

Customer-specific information
Customer : OPEL

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery

Indicator setting:
Piston stroke mm: 0,90
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 3,7...4,1

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del.quantity cm3/
1000H.: 31,3...32,3
Dispersion cm3/: 2,5
1000H.: -

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 6,0...10,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575
Del.quantity cm3/
1000H.: 17,0...23,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 40,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 1500
TD travel mm: -
mm: (3,2...4,6)
3rd speed 1/min: 2300
TD travel mm: 6,9...7,7
mm: (6,6...8,0)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump
pressure bar: 1,7...2,3
2nd speed 1/min: 1000
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 2300
Supply-pump
pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 55...138
quantity cm³/10s: (40...153)
2nd speed 1/min: 2300
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950
Del. quantity cm³/: -
1000H.: 0,0...5,0
2nd speed 1/min: 2735
Del. quantity cm³/: 6,5...13,5
1000H.: (6,0...14,0)
3rd speed 1/min: 2575
Del. quantity cm³/: -
1000H.: (16,0...24,0)
4th speed 1/min: 2300
Del. quantity cm³/: 29,25...31,75
1000H.: (28,3...32,7)
5th speed 1/min: 1500
Del. quantity cm³/: -
1000H.: (29,6...34,0)
6th speed 1/min: 600
Del. quantity cm³/: 23,8...26,8
1000H.: (22,3...28,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2300
Del. quantity cm³/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 425
Del. quantity cm³/: -
1000H.: (4,0...12,0)
2nd speed 1/min: 500
Del. quantity cm³/: 2,0...7,0
1000H.: (0,5...8,5)
3rd speed 1/min: 1200
Del. quantity cm³/: 0,0...2,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
Del. quantity cm³/: -
ind. 1000H.: 30,0

2nd speed 1/min: 400
Del. quantity cm³/: -
max. 1000H.: 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 0,9...1,1
XK	mm	: 17,0...19,0
XL	mm	: 10,6...14,0

Remarks:

XK = 15.65...17.65 mm
XL = 10.90...14.30 mm
(For installation of part-load
governor 1 463 161 798 and engine-
speed control lever 1 461 901 442).

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,6 E1
Edition : 06.07.88
replaces : 28.08.87
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R215-1
Type number : 0 460 494 175
Customer Part-No. :

Customer-specific information
Customer : OPEL

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery

Indicator setting:
Piston stroke mm: 0.90
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 3,7...4,1

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

Speed 1/min: 1500
Del.quantity cm3/
1000H.: 31,3...32,3
Dispersion cm3/: 2,5
1000H.: -

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 6,0...10,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575
Del.quantity cm3/
1000H.: 17,0...23,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 40,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 1500
TD travel mm: -
mm: (3,2...4,6)
3rd speed 1/min: 2300
TD travel mm: 6,9...7,7
mm: (6,6...8,0)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump
pressure bar: 1,7...2,3
2nd speed 1/min: 1000
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 2300
Supply-pump
pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 55...138
quantity cm³/10s: (40...153)
2nd speed 1/min: 2300
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950
Del. quantity cm³/: -
1000H.: 0,0...5,0
2nd speed 1/min: 2735
Del. quantity cm³/: 6,5...13,5
1000H.: (6,0...14,0)
3rd speed 1/min: 2575
Del. quantity cm³/: -
1000H.: (16,0...24,0)
4th speed 1/min: 2300
Del. quantity cm³/: 29,25...31,75
1000H.: (28,3...32,7)
5th speed 1/min: 1500
Del. quantity cm³/: -
1000H.: (29,6...34,0)
6th speed 1/min: 600
Del. quantity cm³/: 23,8...26,8
1000H.: (22,3...28,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2300
Del. quantity cm³/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 425
Del. quantity cm³/: -
1000H.: (4,0...12,0)
2nd speed 1/min: 500
Del. quantity cm³/: 2,0...7,0
1000H.: (0,5...8,5)
3rd speed 1/min: 1200
Del. quantity cm³/: 0,0...2,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
Del. quantity cm³/: -
ind. 1000H: 30,0
2nd speed 1/min: 400
Del. quantity cm³/: -
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 0,9...1,1
XK	mm	: 18,7...20,7
XL	mm	: 10,1...13,5

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,6 E2
Edition : 06.07.88
replaces : 28.08.87
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R215-2
Type number : 0 460 494 176
Customer Part-No. :

Customer-specific information
Customer : OPEL

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery

Indicator setting:
Piston stroke mm: 0.90
Outlet : 0

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 3,7...4,1

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del.quantity cm3/
1000H.: 31,3...32,3
Dispersion cm3/: 2,5
1000H.: -

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 6,0...10,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575
Del.quantity cm3/
1000H.: 17,0...23,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 40,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 1500
TD travel mm: -
mm: (3,2...4,6)
3rd speed 1/min: 2300
TD travel mm: 6,9...7,7
mm: (6,6...8,0)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump
pressure bar: 1,7...2,3
2nd speed 1/min: 1000
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 2300
Supply-pump
pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 500

Overflow : 55...138
quantity cm3/10s: (40...153)
2nd speed 1/min: 2300
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950
Del.quantity cm3/: -
1000H.: 0,0...5,0
2nd speed 1/min: 2735
Del.quantity cm3/: 6,5...13,5
1000H.: (6,0...14,0)
3rd speed 1/min: 2575
Del.quantity cm3/: -
1000H.: (16,0...24,0)
4th speed 1/min: 2300
Del.quantity cm3/: 29,25...31,75
1000H.: (28,3...32,7)
5th speed 1/min: 1500
Del.quantity cm3/: -
1000H.: (29,6...34,0)
6th speed 1/min: 600
Del.quantity cm3/: 23,8...26,8
1000H.: (22,3...28,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2300
Del.quantity cm3/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 425
Del.quantity cm3/: -
1000H.: (4,0...12,0)
2nd speed 1/min: 500
Del.quantity cm3/: 2,0...7,0
1000H.: (0,5...8,5)
3rd speed 1/min: 1200
Del.quantity cm3/: 0,0...2,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
Del.quantity cm3/: -
ind. 1000H: 30,0

2nd speed 1/min: 400
Del.quantity cm3/: -
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 0,9...1,1
SVS max.	mm	: 3,9
XK	mm	: 17,0...20,0
XL	mm	: 10,6...14,0

Remarks:

:
XK = 15.65...17.65 mm
XL = 10.90...14.30 mm
(For installation of part-load
governor 1 463 161 798 and engine-
speed control lever 1 461 901 442).

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 1,6 E3
Edition : 06.07.88
replaces : 28.08.87
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 R215-3
Type number : 0 460 494 177
Customer Part-No. :

Customer-specific information
Customer : OPEL

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery

Indicator setting:
Piston stroke mm: 0.90
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 3,7...4,1

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del.quantity cm3/
1000H.: 31,3...32,3
Dispersion cm3/: 2,5
1000H.: -

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 6,0...10,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2575
Del.quantity cm3/
1000H.: 17,0...23,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 40,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000
TD travel mm: 1,5...2,3
mm: (1,2...2,6)
2nd speed 1/min: 1500
TD travel mm: -
mm: (3,2...4,6)
3rd speed 1/min: 2300
TD travel mm: 6,9...7,7
mm: (6,6...8,0)

Supply-pump pressure characteristic:

1st speed 1/min: 400
Supply-pump
pressure bar: 1,7...2,3
2nd speed 1/min: 1000
Supply-pump
pressure bar: 3,5...4,1
3rd speed 1/min: 2300
Supply-pump
pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 500
Overflow : 55...138
quantity cm³/10s: (40...153)
2nd speed 1/min: 2300
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950
Del. quantity cm³/: -
1000H.: 0,0...5,0
2nd speed 1/min: 2735
Del. quantity cm³/: 6,5...13,5
1000H.: (6,0...14,0)
3rd speed 1/min: 2575
Del. quantity cm³/: -
1000H.: (16,0...24,0)
4th speed 1/min: 2300
Del. quantity cm³/: 29,25...31,75
1000H.: (28,3...32,7)
5th speed 1/min: 1500
Del. quantity cm³/: -
1000H.: (29,6...34,0)
6th speed 1/min: 600
Del. quantity cm³/: 23,8...26,8
1000H.: (22,3...28,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2300
Del. quantity cm³/: -
1000H.: -

Idle delivery:

Mfg. date: until : -
1st speed 1/min: 425
Del. quantity cm³/: -
1000H.: (4,0...12,0)
2nd speed 1/min: 500
Del. quantity cm³/: 2,0...7,0
1000H.: (0,5...8,5)
3rd speed 1/min: 1200
Del. quantity cm³/: 0,0...2,0
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300
Del. quantity cm³/: -
ind. 1000H: 30,0

2nd speed 1/min: 400
Del. quantity cm³/: -
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...6,0
MS	mm	: 0,9...1,1
XK	mm	: 18,7...20,7
XL	mm	: 10,1...13,5

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 1,8A
Edition : 20.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R285
Type number : 0 460 494 216

Customer-specific information
Customer : FORD

Engine : 1,8L IDI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 0.75
Outlet : B

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 6,1...6,5
KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure:

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Speed 1/min: 1500
Setting value bar: 6,3...6,9
KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 1750
Del.quantity cm3/
1000H.: 30,1...30,5
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,0
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 425
Del.quantity cm3/
1000H.: 14,0...18,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: (4,0)
Residual-Delivery Setting
Speed 1/min: 540
Del.quantity cm3/
1000H.: 2,0...6,0
KSB-Solenoid-Operated
valve Volt : 12,0

Full-load speed regulation:

Speed 1/min: 2675
Del.quantity cm3/
1000H.: 8,0...14,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 51,0
KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 400
TD travel mm: 3,9...4,1
mm: (3,0...5,0)
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 1000

TD travel mm: 3,4...5,8
mm: (3,3...5,9)

KSB solenoid-operated
valve volt: -

3rd speed 1/min: 800

TD travel mm: 1,9...2,7
mm: (1,4...3,2)

KSB solenoid-operated
valve volt: 12,0

4th speed 1/min: 1500

TD travel mm: 6,1...6,5
mm: (5,5...7,1)

KSB solenoid-operated
valve volt: 12,0

5th speed 1/min: 2000

TD travel mm: 8,7...9,5
mm: (8,2...10,0)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 650

Supply-pump
pressure bar: 3,8...4,4

KSB solenoid-operated
valve volt: 12,0

2nd speed 1/min: 1500

Supply-pump
pressure bar: 6,3...6,9

KSB solenoid-operated
valve volt: 12,0

3rd speed 1/min: 2000

Supply-pump
pressure bar: 7,9...8,5

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 650

KSB solenoid-operated
valve volt: 12,0

Overflow : 41...83
quantity cm³/10s: (26...98)

2nd speed 1/min: 2400

KSB solenoid-operated
valve volt: 12,0

Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1950

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³/: 0,0...2,0
1000H.: (0,0...2,0)

2nd speed 1/min: 2675

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³/: 8,0...14,0
1000H.: (6,5...15,5)

3rd speed 1/min: 2550

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³/: 18,0...26,0
1000H.: (16,0...28,0)

4th speed 1/min: 2400

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³/: 27,5...29,5
1000H.: (26,5...30,5)

5th speed 1/min: 1750

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³/: 30,1...30,5
1000H.: (28,6...32,0)

6th speed 1/min: 1000

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³/: 28,5...31,5
1000H.: (27,7...32,3)

7th speed 1/min: 650

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³/: 27,5...30,5
1000H.: (26,7...31,3)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425

ELAB volt: -

Del. quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 425

KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³/: 14,0...18,0
1000H.: (10,4...21,6)

High Idle:

Speed 1/min: 590

Del. quantity cm³/: 12,0...16,0
1000H.: (8,4...19,6)

KSB-Solenoid-operated
valve Volt: 12,0

Automatic starting fuel delivery:

1st speed 1/min: 275

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
ind. 1000H: 60,0

2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
max. 1000H : 38,0

3rd speed 1/min: 200
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 60,0...90,0
1000H: -

4th speed 1/mi: 500
KSB solenoid-operated
valve Volt: 12,0
Del.quantity cm3/: 24,0...36,0
1000: -

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

KF mm : 5,3...5,7
MS mm : 1,5...1,9
SVS max. mm : 4,9

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 2,3M3
Edition : 14.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2200 L243-3
Type number : 0 460 494 231
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 2,3

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC) : -

Indicator setting:
Piston stroke mm: 1,0
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200
Setting value mm: 4,3...4,7
KSB solenoid-operated
valve volt: 12,0

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Supply-pump pressure:

Speed 1/min: 1200
Setting value bar: 4,0...4,6
KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 1200
Del.quantity cm3/
1000H.: 43,0...44,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 270
Del.quantity cm3/
1000H.: 10,0...14,0
KSB solenoid-operated
valve volt: 12,0

Full-load speed regulation:

Speed 1/min: 2450
Del.quantity cm3/
1000H.: 21,0...27,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 52,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1200

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300
TD travel mm: 2,7...4,3
mm: -
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 800
TD travel mm: 2,8...5,2
mm: -

KSB solenoid-operated
 valve volt: -
 3rd speed 1/min: 1200
 TD travel mm: 3,8...6,2
 mm: -
 KSB solenoid-operated
 valve volt: -
 4th speed 1/min: 600
 TD travel mm: 0,6...1,4
 mm: -
 KSB solenoid-operated
 valve volt: 12,0
 5th speed 1/min: 800
 TD travel mm: 1,9...2,7
 mm: (1,6...3,0)
 KSB solenoid-operated
 valve volt: 12,0
 6th speed 1/min: 1200
 TD travel mm: 4,3...4,7
 mm: (3,8...5,2)
 KSB solenoid-operated
 valve volt: 12,0
 1st speed 1/min: 2200
 TD travel mm: 9,0...9,8
 mm: (8,7...10,1)

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Supply-pump
 pressure bar: 2,4...3,0
 KSB solenoid-operated
 valve volt: 12,0
 2nd speed 1/min: 800
 Supply-pump
 pressure bar: 3,0...3,6
 KSB solenoid-operated
 valve volt: 12,0
 3rd speed 1/min: 1200
 Supply-pump
 pressure bar: 4,0...4,6
 KSB solenoid-operated
 valve volt: 12,0
 4th speed 1/min: 2200
 Supply-pump
 pressure bar: 6,5...7,1
 KSB solenoid-operated
 valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
 KSB solenoid-operated
 valve volt: 12,0
 Overflow : 41...83
 quantity cm³/10s: (26...98)
 2nd speed 1/min: 2200
 KSB solenoid-operated
 valve volt: 12,0

Overflow : 55...138
 quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2700
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³: 0,0...3,0
 1000H.: -
 2nd speed 1/min: 2600
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³: 4,0...12,0
 1000H.: (3,0...13,0)
 3rd speed 1/min: 2450
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³: 21,0...27,0
 1000H.: (20,0...28,0)
 4th speed 1/min: 2200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³: 34,8...37,8
 1000H.: (34,0...38,6)
 5th speed 1/min: 1200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³: 43,0...44,0
 1000H.: (41,2...45,8)
 6th speed 1/min: 600
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³: 33,5...36,5
 1000H.: (32,0...38,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 270
 ELAB volt: -
 Del.quantity cm³: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 270
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³: 10,0...14,0
 1000H.: (8,0...16,0)
 2nd speed 1/min: 320
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³: 3,0...9,0
 1000H.: (2,5...9,5)
 3rd speed 1/min: 400

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 0,0...2,6
1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 130
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
ind. 1000H: 52,0

2nd speed 1/min: 230
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H : 35,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,6...6,0
MS mm : 1,8...2,0
XK mm : 18,7...20,7
XL mm : 12,6...16,0

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 2,3M4
Edition : 14.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2200 L243-S
Type number : 0 460 494 232
Customer Part-No. :

Customer-specific information
Customer : OPEL

Engine : 2,3

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 000

Opening
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6
x Wall thickness : 2
x Length mm : 840

Start of delivery
Prestroke mm : -
(from BDC) : -

Indicator setting:
Piston stroke mm: 1,0
Outlet : D

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200
Setting value mm: 4,3...4,7
KSB solenoid-operated
valve volt: 12,0

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Supply-pump pressure:

Speed 1/min: 1200
Setting value bar: 4,0...4,6
KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 1200
Del.quantity cm3/
1000H.: 43,0...44,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 270
Del.quantity cm3/
1000H.: 10,0...14,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: (2,5)

Full-load speed regulation:

Speed 1/min: 2450
Del.quantity cm3/
1000H.: 21,0...27,0
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 52,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1200

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 300
TD travel mm: 2,7...4,3
mm: -
KSB solenoid-operated
valve volt: -
2nd speed 1/min: 800

TD travel mm: 2,8...5,2
 mm: -
 KSB solenoid-operated
 valve volt: -
 3rd speed 1/min: 1200
 TD travel mm: 3,8...6,2
 mm: -
 KSB solenoid-operated
 valve volt: -
 4th speed 1/min: 600
 TD travel mm: 0,6...1,4
 mm: -
 KSB solenoid-operated
 valve volt: 12,0
 5th speed 1/min: 800
 TD travel mm: 1,9...2,7
 mm: (1,6...3,0)
 KSB solenoid-operated
 valve volt: 12,0
 6th speed 1/min: 1200
 TD travel mm: 4,3...4,7
 mm: (3,8...5,2)
 KSB solenoid-operated
 valve volt: 12,0
 1st speed 1/min: 2200
 TD travel mm: 9,0...10,0
 mm: (8,7...10,1)
 KSB solenoid-operated
 valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 600
 Supply-pump
 pressure bar: 2,4...3,0
 KSB solenoid-operated
 valve volt: 12,0
 2nd speed 1/min: 800
 Supply-pump
 pressure bar: 3,0...3,6
 KSB solenoid-operated
 valve volt: 12,0
 3rd speed 1/min: 1200
 Supply-pump
 pressure bar: 4,0...4,6
 KSB solenoid-operated
 valve volt: 12,0
 4th speed 1/min: 2200
 Supply-pump
 pressure bar: 6,5...7,1
 KSB solenoid-operated
 valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
 KSB solenoid-operated
 valve volt: 12,0

Overflow : 41...83
 quantity cm³/10s: (26...98)
 2nd speed 1/min: 2200
 KSB solenoid-operated
 valve volt: 12,0
 Overflow : 55...138
 quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2700
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 0,0...3,0
 1000H.: (0,0...3,0)
 2nd speed 1/min: 2600
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 4,0...12,0
 1000H.: (4,0...12,0)
 3rd speed 1/min: 2450
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 21,0...27,0
 1000H.: (20,0...28,0)
 4th speed 1/min: 2200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 34,8...37,8
 1000H.: (34,0...38,6)
 5th speed 1/min: 1200
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 43,0...44,0
 1000H.: (41,2...46,8)
 6th speed 1/min: 600
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 33,5...36,5
 1000H.: (32,0...38,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 270
 ELAB volt: -
 Del.quantity cm³/: 0,0...3,0
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 270
 KSB solenoid-operated
 valve volt: 12,0
 Del.quantity cm³/: 10,0...14,0
 1000H.: (8,0...16,0)
 2nd speed 1/min: 320

KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 3,0...9,0
1000H.: (2,5...9,5)
3rd speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 0,0...2,6
1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 130
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
ind. 1000H: 52,0

2nd speed 1/min: 230
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: -
max. 1000H : 35,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 5,6...6,0
MS mm : -
XK mm : 17,0...19,0
XL mm : 9,2...12,6

Remarks:

:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FOR 1,6 A3
Edition : 12.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R125-3
Type number : 0 460 494 233
Customer Part-No. :

Customer-specific information
Customer : FORD/GB

Engine : 1,6 L.IDI

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC) : -

Indicator setting:
Piston stroke mm : 0.92
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 5,7...6,1
KSB solenoid-operated
valve volt: 12,0

H01

Supply-pump pressure:

Speed 1/min: 1500
Setting value bar: 5,3...5,9
KSB solenoid-operated
valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min : 1750
Del.quantity cm3/
1000H.: 28,8...29,8
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,5
1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 440
Del.quantity cm3/
1000H.: 7,0...11,0
KSB solenoid-operated
valve volt: 12,0
Dispersion cm3/: 2,0
1000H.: (2,0)

Full-load speed regulation:

Speed 1/min: 2675
Del.quantity cm3/
1000H.: 7,5...13,5
KSB solenoid-operated
valve volt: 12,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 50,0
KSB solenoid-operated
valve volt: 12,0

Load-dependent start of delivery:

Speed 1/min: 1100
KSB solenoid-operated
valve volt: 12,0

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600
TD travel mm: 2,8...5,8
mm: (2,8...5,8)

KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 800
TD travel mm: 2,8...3,6
mm: (2,5...3,9)

KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 1500
TD travel mm: 5,7...6,1
mm: (5,2...6,6)

KSB solenoid-operated
valve volt: 12,0
4th speed 1/min: 2000
TD travel mm: 7,5...8,3
mm: (7,2...8,6)

KSB solenoid-operated
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3,1...3,7

KSB solenoid-operated
valve volt: 12,0
2nd speed 1/min: 1500
Supply-pump
pressure bar: 5,3...5,9

KSB solenoid-operated
valve volt: 12,0
3rd speed 1/min: 2000
Supply-pump
pressure bar: 6,6...7,2

KSB solenoid-operated
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600
KSB solenoid-operated
valve volt: 12,0
Overflow : 41...83
quantity cm³/10s: (26...98)

2nd speed 1/min: 2400
KSB solenoid-operated
valve volt: 12,0
Overflow : 55...138
quantity cm³/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2950
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 0,0...2,0
1000H.: (0,0...2,0)

2nd speed 1/min: 2675
KSB solenoid-operated
valve volt: 12,0

Del. quantity cm³/: 7,5...13,5
1000H.: (6,5...14,5)

3rd speed 1/min: 2550

KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 18,5...26,5
1000H.: (17,5...29,5)

4th speed 1/min: 2400

KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 27,2...29,2
1000H.: (26,0...30,4)

5th speed 1/min: 1750

KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 28,8...29,8
1000H.: (27,1...31,5)

6th speed 1/min: 1000

KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 24,1...27,1
1000H.: (23,4...27,8)

7th speed 1/min: 600

KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 23,0...26,0
1000H.: (21,5...27,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 440
ELAB volt: -
Del. quantity cm³/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 440
KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 7,0...11,0
1000H.: (5,0...13,0)

2nd speed 1/min: 475

KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 2,5...7,5
1000H.: (0,5...9,5)

3rd speed 1/min: 570

KSB solenoid-operated
valve volt: 12,0
Del. quantity cm³/: 0,0...3,6
1000H.: (0,0...3,6)

Arrangement of drivers on engine-
speed lever for exhaust-gas-
recirculation valve linkage (gauge)

1st speed 1/min: 1100
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: 10,6...11,6
1000H.: 9,1...13,1

Automatic starting fuel delivery:

1st speed 1/min: 400
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
ind. 1000H: 30,0

2nd speed 1/min: 500
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm³/: -
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,4...3,6
KF	mm	: 5,6...6,0
MS	mm	: 1,5...1,9
SVS max.	mm	: 3,0

Remarks:

For adjustment of switching point
(EGR valve), include 10,8 mm spacer
at third fuel-delivery stop.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,7 P3
Edition : 15.07.88
replaces : -
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2300 256-1
Type number : 0 460 494 235
Customer Part-No. :

Customer-specific information
Customer : FIAT-AUTO

Engine : M708 CA 17.0

TEST BENCH REQUIREMENTS

Calibrating-oil
return temp. °C
with thermometer : 40...48
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder
assembly : 1 688 901 022

Opening
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6
x Wall thickness : 2
x Length mm : 450

Start of delivery
Prestroke mm : -
(from BDC): -

Indicator setting:
Piston stroke mm: 1,0
Outlet : A

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500
Setting value mm: 4,3...4,7

Supply-pump pressure:

H04

Speed 1/min: 1500
Setting value bar: 5,2...5,9

Full-load del. w/out charge press.:

Speed 1/min : 1500
Del.quantity cm3/
1000H.: 29,5...30,5
Dispersion cm3/: 2,5
1000H.: (2,5)

Low-idle speed regulation:

Speed 1/min: 390
Del.quantity cm3/
1000H.: 10,0...14,0
Dispersion cm3/: 2,5
1000H.: (2,5)

Full-load speed regulation:

Speed 1/min: 2450
Del.quantity cm3/
1000H.: 19,0...25,0

Start:

Speed 1/min: 100
Del.quantity : -
mind cm3/1000H.: 55,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800
TD travel mm: 1,2...2,0
mm: (0,9...2,3)
2nd speed 1/min: 1500
TD travel mm: 4,3...4,7
mm: (3,8...5,2)
3rd speed 1/min: 2300
TD travel mm: 7,4...8,2
mm: (7,1...8,5)

Supply-pump pressure characteristic:

1st speed 1/min: 600
Supply-pump
pressure bar: 3,1...3,7
2nd speed 1/min: 1500
Supply-pump
pressure bar: 5,3...5,9

3rd speed 1/min: 2300
Supply-pump pressure bar: 7,1...7,7

Overflow quantity at overflow valve:

1st speed 1/min: 600
Overflow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2300
Overflow : 55...138
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2900
Del.quantity cm3/: 0,0...1,6
1000H.: -
2nd speed 1/min: 2650
Del.quantity cm3/: 1,5...8,5
1000H.: (0,0...10,0)
3rd speed 1/min: 2450
Del.quantity cm3/: 19,0...25,0
1000H.: (18,0...26,0)
4th speed 1/min: 2300
Del.quantity cm3/: 30,8...33,2
1000H.: (29,7...34,3)
5th speed 1/min: 1500
Del.quantity cm3/: 29,5...30,5
1000H.: (27,7...32,3)
6th speed 1/min: 1000
Del.quantity cm3/: 29,6...32,0
1000H.: (28,5...33,1)
7th speed 1/min: 600
Del.quantity cm3/: 30,5...33,5
1000H.: (29,0...35,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 390
ELAB volt: -
Del.quantity cm3/: 0,0...3,0
max. 1000H.: -

Idle delivery:

1st speed 1/min: 390
Del.quantity cm3/: 10,0...14,0
1000H.: (7,0...17,0)
2nd speed 1/min: 440
Del.quantity cm3/: 0,0...6,0
1000H.: (0,0...8,5)
3rd speed 1/min: 500
Del.quantity cm3/: 0,0...3,0
1000H.: -

Automatic starting fuel delivery:

H05

1st speed 1/min: 300
Del.quantity cm3/: -
ind. 1000H: 48,0

2nd speed 1/min: 400
Del.quantity cm3/: -
max. 1000H : 45,0

Shutoff electromagnet:

Cut-in
min. voltage : 10,0
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 5,6...6,0
KF mm : 3,2...3,4
MS mm : 1,6...2,0

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 r2
Edition : 19.08.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 074 901
Injection pump
Pump designation : PES4M55C32ORS172
EP type number : 0 410 054 958
Governor
Governor design. : RSF375/2300M56-8
Governor no. : 0 420 021 116

Customer-spec. information
Customer : DB

Engine : OM601-Abgasl.

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 3- 4- 2

H06

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del. quantity cm³/ : 3.0...3.1

100 s: (2.9...3.2)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 30.5...31.5

1000 : (29.5...32.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,0...8,4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed      rpm      : 100
Del.quantity cm3/    : 52.0...0.0
            1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00
```

HIGH IDLE

```
1st version
Aneroid pressure h: 1100
Speed      rpm    : 2500
Rack travel in mm : 8.00...8.40
Del.quantity cm3/  : 16.0...20.0
              1000 s: (15.0...21.0)
Spread      cm3    : 2.50
              1000 s: (3.00)
```

LOW IDLE

```
Speed      rpm      : 375
Rack travel in mm : 6.40...6.60
Del.quantity cm3/  : 5.0...6.0
              1000 s: (4.5...9.0)
Spread      cm3      : 1.00
              1000 s: (1.50)
```

SETTING PNUEUMATIC FAST IDLE
(ELA)

Speed rpm : 425
 Rack travel in mm : (7,8...9,4)
 Del.quantity cm3/ : (10,5...18,5)
 1000 s : -
 Vacuum hPa : 400

Remarks:

Pin projection = 16.60...16.70 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, $17.3...17.7^\circ$
($17.2...17.8^\circ$) angular displacement of
the cam after cylinder 1.

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 r3
Edition : 19.08.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 074 902

Injection pump
Pump designation : PES4M55C32ORS172
EP type number : 0 410 054 958
Governor
Governor design. : RSF360/2300M60-23
Governor no. : 0 420 021 117

Customer-spec. information
Customer : DB

Engine : OM601-Abgasl.

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values ----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

H09

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.10...12.20

Del. quantity cm³/ : 3.0...3.1

100 s: (2.9...3.2)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 335.0

Rack travel in mm : 6.5...6.7

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 30.5...31.5

1000 : (29.5...32.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,0...8,4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed      rpm      : 100
Del.quantity cm3/    : 52.0...0.0
              1000 s: (52.0...0.0)
Rack travel in mm   : 20.10...0.00
```

HIGH IDLE

```
1st version
Aneroid pressure h: 1100
Speed      rpm      : 2500
Rack travel in mm : 8.00...8.40
Del.quantity cm3/   : 16.0...20.0
              1000 s: (15.0...21.0)
Spread      cm3      : 2.50
              1000 s: (3.00)
```

LOW IDLE

```
Speed      rpm      : 335
Rack travel in mm : 6.50...6.70
Del.quantity cm3/  : 5.0...6.0
            1000 s : (4.5...9.0)
Spread     cm3      : 1.00
            1000 s : (1.50)
```

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

```
Control lever at idle stop
Speed      rpm      : 360
Rack travel in mm : (13,0...14,4)
Del.quantity cm3/ : (29,0...37,0)
1000 s : -
```

Current A : 1,8
Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0,0...1,0
Current

```

short-duration A : 3,0
Starting test
Speed      rpm      : 100
Del.quantity cm3/    : -
min.       1000 s : 52,00

```

Remarks:

Pin projection = 16.60...16.70 mm

Start-of-delivery spacing (difference)
between max/min value 1^o cam angle

maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

- Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

START-OF-DELIVERY ADJUSTMENT

- Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, $17.3...17.7^{\circ}$
($17.2...17.8^{\circ}$) angular displacement of
the cam after cylinder 1.

TESTING PNEUMATIC SHUTOFF DEVICE

- Control lever at idle stop.
With $n = 335$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,4 V7
Edition : 06.09.88
Replaces : 09.03.87
Test oil : ISO-4113

Combination no. : 0 400 074 909

Injection pump
Pump designation : PES4M55C320RS107-2
EP type number : 0 410 054 962
Governor
Governor design. : RSF375/1900M18-4
Governor no. : 0 420 021 096

Customer-spec. information
Customer : DB

Engine : OM616 (2.4 L)

1st version kW : 47.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.20...2.30
: (2.15...2.35)

Rack travel in mm : 20.00...0.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.00...13.10

Del. quantity cm³/ : 3.7...3.8

100 s : (3.6...3.9)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.1...6.3

Del. quantity cm³/ : 0.6...0.7

100 s : (0.5...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 37.5...38.5

1000 : (36.5...39.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,80...8,20

Speed rpm : 2100

4th rack travel in: 2350

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 9...13

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm : 6.2

```
Speed          rpm : 250
Minimum rack   travel: 10.50
Speed          rpm : 375
Rack travel    in mm : 6.10...6.30
Rack travel    in mm : 2.00
Speed          rpm : 720...820
Speed          rpm : 1000
Maximum rack   travel: 1.50
```

```
Speed      rpm      : 450
Rack travel in mm : 4,90...5,10
               : (4,80...5,20)
```

```

Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 13.00...13.10
2nd speed   rpm   : 1400
  Rack travel in m: 12.40...12.60
3rd speed   rpm   : 1900
  Rack travel in m: 12.00...12.20

```

```
Speed      rpm      : 1400
Del.quantity cm3/    : 37.5...39.5
              1000 s: (36.5...40.5)
Spread     cm3       : 2.50
              1000 s: (3.)
Speed      rpm      : 1900
Del.quantity cm3/    : 38.0...40.0
              1000 s: (37.0...41.0)
Spread     cm3       : 2.50
              1000 s: (3.00)
```

```
Speed      rpm      : 100
Del.quantity cm3/    : 53.0...0.0
              1000 s: (53.0...0.0)
Rack travel in mm : 20.10...0.00
```

```
Speed          rpm      : 2150
Rack travel in mm : 7.80...8.20
Del.quantity cm3/  : 20.0...24.0
                1000 s : (19.0...25.0)
Spread         cm3      : 2.50
                1000 s : (3.00)
```

H13

```
Speed      rpm      : 375
Rack travel in mm : 6.10...6.30
Del.quantity cm3/  : 6.0...7.0
              1000 s: (5.5...9.0)
Spread      cm3      : 1.00
              1000 s: (1.50)
```

Remarks:

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

-Control lever at idle stop.
With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,4 V4
Edition : 06.09.88
Replaces : 26.06.87
Test oil : ISO-4113

Combination no. : 0 400 074 924

Injection pump
Pump designation : PES4M55C320RS104-1
EP type number : 0 410 054 963
Governor
Governor design. : RSF375/2200M12-1
Governor no. : 0 420 021 064

Customer-spec. information
Customer : DB

Engine : OM616 -2.4 l-

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...0.00

Firing order : 1- 3- 4- 2

H14

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.40...13.50

Del. quantity cm³/ : 3.7...3.8

100 s: (3.6...3.9)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375

Rack travel in mm : 6.5...6.7

Del. quantity cm³/ : 0.6...0.7

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 37.0...38.0

1000 : (36.0...39.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,70...8,10

Speed rpm : 2400

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm : 6.6

Testing:

Speed rpm : 250
Minimum rack travel: 10.50
Speed rpm : 375
Rack travel in mm : 6.50...6.70
Rack travel in mm : 2.00
Speed rpm : 750...850
Speed rpm : 1000
Maximum rack travel: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 450
Rack travel in mm : 5.10...5.30
: (5.00...5.40)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.40...13.50
2nd speed rpm : 1600
Rack travel in m: 12.70...12.90
3rd speed rpm : 2100
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1600
Del. quantity cm³/ : 37.5...39.5
1000 s: (36.5...40.5)
Spread cm³ : 2.50
1000 s: (3.)
Speed rpm : 2100
Del. quantity cm³/ : 36.5...38.5
1000 s: (35.5...39.5)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 53.0...0.0
1000 s: (53.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Speed rpm : 2400
Rack travel in mm : 7.70...8.10
Del. quantity cm³/ : 15.0...19.0
1000 s: (14.0...20.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

H15

Speed rpm : 375
Rack travel in mm : 6.50...6.70
Del. quantity cm³/ : 6.0...7.0
1000 s: (5.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

Remarks:

:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/min...450 1/min.

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With n = 375 1/min. and p_u = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 P11
Edition : 22.04.88
Replaces : 25.08.87
Test oil : ISO-4113

Combination no. : 0 400 074 926

Injection pump
Pump designation : PES4M55C32ORS161
EP type number : 0 410 054 964
Governor
Governor design. : RSF375/2300MS6-3
Governor no. : 0 420 021 056

Customer-spec. information
Customer : DB

Engine : OM601-LVP

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 1.50...1.60
: (1.45...1.65)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

H16

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del. quantity cm³/ : 3.1...3.2

100 s : (3.0...3.3)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 375

Rack travel in mm : 5.2...5.4

Del. quantity cm³/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 31.0...32.0

1000 : (30.0...33.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees : 50...0

3rd rack travel in : 7,10...7,50

Speed rpm : 2500

4th rack travel in : 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,90...2,00

LOW IDLE 1

Control lever

position degrees : 13...17

Setting point w/out bumper spring

Speed rpm : 375

Testing:

```
Speed      rpm : 250
Minimum rack travel: 10.00
Speed      rpm : 375
Rack travel in mm : 5.20...5.40
Speed      rpm : 1000
Maximum rack travel: 2.00
```

SET IDLE AUXILIARY SPRING

```
Speed      rpm      : 400
Rack travel in mm : 4,20...4,40
                : (4,10...4,50)
```

TORQUE CONTROL

```
Torque control curve - 1st version
1st speed  rpm   : 1000
  Rack travel in m: 11.30...11.40
2nd speed  rpm   : 1800
  Rack travel in m: 10.90...11.10
3rd speed  rpm   : 2250
  Rack travel in m: 10.30...10.50
```

Aneroid/Altitude Compensator Test

1st version

```
Setting
Speed      rpm      : 1000
Pressure    hPa      : 930
Rack travel mm      : 0.10...0.50
```

Measurement

Speed 1/min : 1000

```
1st pressure hPa : 840
  Rack travel in m: 1.10...1.30
2nd pressure hPa : 700
  Rack travel in m: 2.30...2.70
```

FUEL DELIVERY CHARACTERISTICS

1st version

```
Speed      rpm      : 1800
Del.quantity cm3/    : 34.0...35.5
              1000 s: (33.0...36.5)
Spread      cm3      : 2.50
              1000 s: (3.)
Speed      rpm      : 2250
Del.quantity cm3/    : 32.0...34.0
              1000 s: (31.0...35.0)
Spread      cm3      : 2.50
              1000 s: (3.00)
```

STARTING FUEL DELIVERY

```
Speed      rpm      : 100
Del.quantity cm3/    : 52.0...0.0
              1000 s: (52.0...0.0)
Rack travel in mm   : 20.10...0.00
```

HIGH IDLE

1st version

```
Speed      rpm      : 2500
Rack travel in mm : 7.10...7.50
Del.quantity cm3/  : 16.0...20.0
              1000 s : (15.0...21.0)
Spread      cm3      : 2.50
              1000 s : (3.00)
```

LOW IDLE

```
Speed      rpm      : 375
Rack travel in mm : 5.20...5.40
Del.quantity cm3/  : 5.0...6.0
              1000 s : (4.5...9.0)
Spread      cm3     : 1.00
              1000 s : (1.50)
```

Remarks:

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock after start-of-delivery mean value of all cylinders, 18.3...18.7° (18.2...18.8°) angular displacement of the cam after cylinder 1.

Pin projection = 16.60...16.70 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 U3
Edition : 22.04.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 074 927

Injection pump
Pump designation : PES4M55C32ORS161
EP type number : 0 410 054 964
Governor
Governor design. : RSF360/2300M60-2
Governor no. : 0 420 021 053

Customer-spec. information
Customer : DB

Engine : OM601-LVP

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.50...1.60
: (1.45...1.65)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

H19

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.50...11.60

Del. quantity cm³/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 335

Rack travel in mm : 5.0...5.2

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.00...7.40

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.90...2.00

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 335

Pin projection = 16.60...16.70 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 V3
 Edition : 06.09.88
 Replaces : 01.85
 Test oil : ISO-4113
 Combination no. : 0 400 075 005
 Injection pump
 Pump designation : PES5M55C320RS109-1
 EP type number : 0 410 055 989
 Governor
 Governor design. : RSV400...2200MOC352
 Governor no. : 0 420 033 035

Customer-spec. information
 Customer : DB

Engine : OM617

1st version kW : 65.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 20.00...0.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288.

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 2180

Rack travel in mm : 12.40...12.50

Del. quantity cm³/ : 3.8...3.9

100 s : (3.7...4.0)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 400

Rack travel in mm : 6.2...6.4

Del. quantity cm³/ : 0.6...0.8

100 s : (0.5...0.9)

Spread cm³ : 0.1

100 s : (0.1)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 2180

Del. quantity : 38.5...39.5

1000 : (37.5...40.5)

Spread cm³ : 2.00

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 66...74

Testing:

1st rack travel in: 11.40

Speed rpm : 2240...2250

2nd rack travel in: 4.00

Speed rpm : 2400...2420

3rd rack travel in: 0.30...1.70

Speed rpm : 2550

LOW IDLE 1

Control lever

position degrees: 35...43

Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.3

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 13.10...13.20
2nd speed rpm : 1500
Rack travel in m: 12.60...12.90
3rd speed rpm : 2180
Rack travel in m: 12.40...12.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000
Del. quantity cm³/ : 36.5...37.5
1000 s: (35.5...38.5)
Spread cm³ : 2.50
1000 s: (3.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40
Speed rpm : 2240...2250

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 53.0
1000 s: -
Rack travel in mm : 20.30...0.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.20...6.40
Del. quantity cm³/ : 6.0...8.0
1000 s: (5.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

Remarks:

:

Set idle-speed auxiliary spring to
contact at control-rod travel 2.0 mm,
then turn back 1/2 turn.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H1
Edition : 16.06.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 949

Injection pump
Pump designation : PESSM55C320RS173
EP type number : 0 410 055 976
Governor
Governor design. : RSF350/2300MS6-7
Governor no. : 0 420 021 119

Customer-spec. information
Customer : DB

Engine : OM602-Abgasl.

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

H24

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del. quantity cm³/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 350

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,20...9,60

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, $16.3...16.7^{\circ}$
($16.2...16.8^{\circ}$) angular displacement of
the cam after cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H2
Edition : 16.06.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 950

Injection pump
Pump designation : PESSM55C32ORS173
EP type number : 0 410 055 976
Governor
Governor design. : RSF340/2300M60-22
Governor no. : 0 420 021 120

Customer-spec. information
Customer : DB

Engine : OM602-Abgasl.

1st version kW : 64.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

H27

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del. quantity cm³/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 315

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,20...9,60

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed      rpm      : 100
Del.quantity cm3/    : 52.0...0.0
              1000 s: (52.0...0.0)
Rack travel in mm  : 20.10...0.00
```

HIGH IDLE

```
1st version
Aneroid pressure h: 1100
Speed      rpm      : 2500
Rack travel in mm : 9.20...9.60
Del.quantity cm3/  : 22.0...26.0
                1000 s: (21.0...27.0)
Spread      cm3      : 2.50
                1000 s: (3.00)
```

LOW IDLE

```
Speed      rpm      : 315
Rack travel in mm : 6.40...6.60
Del.quantity cm3/  : 5.0...6.0
              1000 s: (4.5...9.0)
Spread      cm3      : 1.00
              1000 s: (1.50)
```

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

```
Speed rpm : 340
Rack travel in mm : (13,0...14,4)
Del.quantity cm3/ : (29,0...37,0)
1000 s: -
```

Current A : 1,8
Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0,0...1,0
Current

short-duration A : 3,0

Starting test

```
Speed      rpm      : 100
Del.quantity cm3/    : 52,0
min.       1000 s: -
```

Remarks:

Pin projection = 16.60...16.70 mm

Start-of-delivery spacing (difference)
between max/min value 1° cam angle

maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, $16.3...16.7^{\circ}$
($16.2...16.8^{\circ}$) angular displacement of
the cam after cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H3
 Edition : 05.08.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 075 951
 Injection pump
 Pump designation : PES5M55C32ORS170
 EP type number : 0 410 055 977
 Governor
 Governor design. : RSF340/2300M60-20
 Governor no. : 0 420 021 111

Customer-spec. information
 Customer : DB

Engine : OM602-ECE

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

J02

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 315

Rack travel in mm : 6.8...7.0

Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,90...9,30

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,3...1,4

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed      rpm      : 100
Del.quantity cm3/    : 52.0...0.0
              1000 s: (52.0...0.0)
Rack travel in mm   : 20.10...0.00
```

HIGH IDLE

```

1st version
Aneroid pressure h: 1100
Speed      rpm    : 2500
Rack travel in mm : 8.90...9.30
Del.quantity cm3/  : 22.0...26.0
              1000 s: (21.0...27.0)
Spread      cm3    : 2.50
              1000 s: (3.00)

```

LOW IDLE

```
Speed      rpm      : 315
Rack travel in mm : 6.80...7.00
Del.quantity cm3/  : 5.0...6.0
              1000 s: (4.5...9.0)
Spread      cm3      : 1.00
              1000 s: (1.50)
```

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

```
Control lever at idle stop
Speed          rpm      : 340
Rack travel in mm : -
Del.quantity cm3/   : -
                1000 s : -
Current A       : 1,8
Control lever at full-load stop
Speed          rpm      : 2950
Rack travel in mm : 0,0...1,0
Current
```

```

short-duration A : 3,0
Starting test
Speed      rpm      : 100
Del.quantity cm3/    : 52,1
min.      1000 s : -

```

Remarks:

Pin projection = 16.60...16.70 mm

SETTING OF FBG

-Setting and locking of FBG according

to start-of-delivery average of all
cylinders $19.3...19.7^{\circ}$ ($19.2...19.8^{\circ}$).
Cam angle according to cyl. 1.

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H4
Edition : 05.08.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 952

Injection pump
Pump designation : PESSM55C320RS170
EP type number : 0 410 055 977
Governor
Governor design. : RSF350/2300M56-5
Governor no. : 0 420 021 112

Customer-spec. information
Customer : DB

Engine : OM602-ECE

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

J05

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 3.2...3.3

100 s : (3.1...3.4)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 350

Rack travel in mm : 6.8...7.0

Del. quantity cm³/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees : 50...0

3rd rack travel in : 8,90...9,30

Speed rpm : 2500

4th rack travel in : 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,3...1,4

LOW IDLE 1

Control lever

position degrees : 11...15

Setting point w/out bumper spring

J06

CHECKING THE PNEUMATIC SHUTOFF BOX

- Control lever up against idle stop.
At $n = 350$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY
SPRING CUTOFF

- Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H5
Edition : 05.08.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 075 953
Injection pump
Pump designation : PESSM55C320RS170
EP type number : 0 410 055 977
Governor
Governor design. : RSF350/2300M71
Governor no. : 0 420 021 113

Customer-spec. information
Customer : DB

Engine : OM602-ECE

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

J08

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 350

Rack travel in mm : 6.8...7.0

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,90...9,30

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,3...1,4

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

between max/min value 1° cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.

At $n = 350$ 1/min and $p_u = 450$ mbar

control rod must move briskly to

control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.

0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.

Control-lever position 46.5° ,

control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H6
Edition : 06.09.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 975

Injection pump
Pump designation : PESSM55C32ORS159
EP type number : 0 410 055 985
Governor
Governor design. : RSF350/2300M56-2
Governor no. : 0 420 021 055

Customer-spec. information
Customer : DB

Engine : OM602-LVP

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.50...1.60
: (1.45...1.65)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

J11

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.50...11.60

Del. quantity cm³/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 350

Rack travel in mm : 5.0...5.2

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,0...7,4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 350

SPRING CUTOFF

- Control-lever position 49° , max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
- Control-lever position 46.5° ,
control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

START-OF-DELIVERY ADJUSTMENT

- Start-of delivery adjustment and lock after start-of-delivery mean value of all cylinders, $18.3...18.7^{\circ}$ ($18.2...18.8^{\circ}$) angular displacement of the cam after cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H7
Edition : 22.04.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 977

Injection pump
Pump designation : PES5M55C320RS159
EP type number : 0 410 055 985
Governor
Governor design. : RSF340/2300M60-1
Governor no. : 0 420 021 042

Customer-spec. information
Customer : DB

Engine : OM602-LVP

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.50...1.60
: (1.45...1.65)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.50...11.60

Del. quantity cm³/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 315

Rack travel in mm : 5.0...5.2

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.00...7.40

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.9...2.0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 315

Testing:

```
Speed      rpm : 220
Minimum rack travel: 7.50
Speed      rpm : 315
Rack travel in mm : 5.00...5.20
Speed      rpm : 1000
Maximum rack travel: 2.00
```

SET IDLE AUXILIARY SPRING

```
Speed      rpm      : 380
Rack travel in mm : 3.80...4.00
                : (3.70...4.10)
```

TORQUE CONTROL

```
Torque control curve - 1st version
1st speed   rpm   : 1000
  Rack travel in m: 11.50...11.60
2nd speed   rpm   : 1800
  Rack travel in m: 11.00...11.20
3rd speed   rpm   : 2250
  Rack travel in m: 10.60...10.80
```

Aneroid/Altitude Compensator Test

1st version

```

Setting
Speed      rpm      : 1000
Pressure   hPa       : 930
Rack travel mm     : 0.10...0.50

```

Measurement

Speed 1/min : 1000

```
1st pressure hPa : 840
  Rack travel in m: 1.10...1.30
2nd pressure hPa : 700
  Rack travel in m: 2.30...2.70
```

FUEL DELIVERY CHARACTERISTICS

1st version

```
Speed      rpm      : 1800
Del.quantity cm3/    : 35.0...36.5
              1000 s: (34.0...37.5)
Spread      cm3      : 2.50
              1000 s: (3.)
Speed      rpm      : 2250
Del.quantity cm3/    : 33.0...35.0
              1000 s: (32.0...36.0)
Spread      cm3      : 2.50
              1000 s: (3.00)
```

STARTING FUEL DELIVERY

```
Speed      rpm      : 100
Del.quantity cm3/    : 52.0...0.0
              1000 s: (52.0...0.0)
Rack travel in mm   : 20.10...0.00
```

HIGH IDLE

```
1st version
Speed      rpm      : 2500
Rack travel in mm : 7.00...7.40
Del.quantity cm3/  : 16.0...20.0
              1000 s: (15.0...21.0)
Spread     cm3      : 2.50
              1000 s: (3.00)
```

LOW IDLE

```
Speed      rpm      : 315
Rack travel in mm : 5.00...5.20
Del.quantity cm3/  : 5.0...6.0
              1000 s: (4.5...9.0)
Spread      cm3     : 1.00
              1000 s: (1.50)
```

SETTING/TESTING ELECTRONIC IDLE
REGULATION (ELR)

Control lever at idle stop

```
Speed      rpm      : 340
Rack travel in mm : -
Del.quantity cm3/  : -
              1000 s: -
```

Current A : 1.8
Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : -

```

Current
short-duration A : 3,0
Starting test
Speed      rpm      : 100
Del.quantity cm3/   : -
min.       1000 s: 52,

```

Remarks:

Pin projection = 16.60...16.70 mm

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

CHECKING THE IDLE-SPEED AUXILIARY

SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 315$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT

-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, $18.3...18.7^{\circ}$
($18.2...18.8^{\circ}$) angular displacement of
the cam after cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,5 H8
Edition : 06.09.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 075 978

Injection pump
Pump designation : PESSM55C32ORS153
EP type number : 0 410 055 991
Governor
Governor design. : RSF350/2300M55-6
Governor no. : 0 420 021 052

Customer-spec. information
Customer : DB

Engine : OM602

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 2- 4- 5- 3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del. quantity cm³/ : 3.1...3.2

100 s : (3.0...3.3)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 350

Rack travel in mm : 5.4...5.6

Del. quantity cm³/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,80...8,20

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1,0

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 0,9...1,0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 350

Testing:

```
Speed      rpm : 220
Minimum rack travel: 10.00
Speed      rpm : 400
Rack travel in mm : 4.20...4.40
Rack travel in mm : 1.50
Speed      rpm : 640...740
Speed      rpm : 1000
Maximum rack travel: 1.00
```

SET IDLE AUXILIARY SPRING

```
Speed      rpm      : 400
Rack travel in mm : 4,20...4,40
                : (4,10...4,50)
```

TORQUE CONTROL

```
Torque control curve - 1st version
1st speed  rpm   : 1000
  Rack travel in m: 11.30...11.40
2nd speed  rpm   : 1800
  Rack travel in m: 10.90...11.10
3rd speed  rpm   : 2200
  Rack travel in m: 10.60...10.80
```

FUEL DELIVERY CHARACTERISTICS

1st version

```
Speed      rpm      : 1800
Del.quantity cm3/    : 34.0...35.5
              1000 s: (33.0...36.5)
Spread     cm3       : 2.50
              1000 s: (3.00)
Speed      rpm      : 2200
Del.quantity cm3/    : 33.5...35.5
              1000 s: (32.5...36.5)
Spread     cm3       : 2.50
              1000 s: 3.00
```

STARTING FUEL DELIVERY

Speed rpm : 100
 Rack travel in mm : 20,10,...0.00

HIGH IDLE

1st version

```
Speed      rpm      : 2500
Rack travel in mm : 7.80...8.20
Del. quantity cm3/ : 22.0...26.0
            1000 s : (21.0...27.0)
Spread     cm3      : 2.50
            1000 s : (3.00)
```

LOW IDLE

```
Speed      rpm      : 350
Rack travel in mm : 5.40...5.60
Del.quantity cm3/  : 5.0...6.0
              1000 s: (4.5...9.0)
Spread      cm3      : 1.00
              1000 s: (1.50)
```

SETTING PNUEUMATIC FAST IDLE
(ELA)

```
Speed      rpm      : 400
Rack travel in mm : (5,20...6,80)
Del.quantity cm3/ : (5,00...13,0)
            1000 s : -
Vacuum     hPa      : 400
```

Remarks:

SETTING OF FBG

-Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°).
Cam angle according to cyl. 1.

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 350$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 b
Edition : 15.06.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 076 727

Injection pump
Pump designation : PES6P120A72ORS3203
EP type number : 0 412 026 728
Governor
Governor design. : RSV400...1100P2A534-
2
Governor no. : 0 421 833 290

Cust. part no. : RE32034

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076AF

1st version kW : 160.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 27...29

Prestroke mm : 3.55...3.65
: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 13.5...13.7
100 s : (13.2...13.9)

Spread cm3 : 0.4
100 s : (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.8...2.3
100 s : (1.6...2.6)

Spread cm3 : 0.4
100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h : 900
Del.quantity : 135.0...137.0
1000 : (132.5...139.5)

Spread cm3 : 4.00
1000 : (7.50)

RATED SPEED

1st version

Control lever
position degrees: 42...50

Testing:
1st rack travel in: 9.70
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1195...1205
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 555...615

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.70...10.80
2nd speed rpm : 700
Rack travel in m: 12.00...12.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.90...10.10

Measurement
Speed 1/min : 500

1st pressure hPa : 470
Rack travel in m: 10.50...10.60
2nd pressure hPa : 605
Rack travel in m: 11.30...11.70
3rd pressure hPa : 900
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700

Del.quantity cm³/ : 176.5...181.5
1000 s: (174.0...184.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : -
1000 s: (127.0...137.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.70
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 18.5...23.5
1000 s: (16.0...26.0)
Spread cm³ : 4.50
1000 s: (7.50)

Remarks:

:
Adjustment without torque-control
spring retainer with 1 mm less
Starting/full-load transition speed
from holding magnet = 450 1/min. ntol
pring retainer.
Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 W22
Edition : 19.08.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 076 970

Injection pump
Pump designation : PES6M55C32ORS174
EP type number : 0 410 056 988
Governor
Governor design. : RSF315/2300M60-21
Governor no. : 0 420 021 122

Customer-spec. information
Customer : DB

Engine : OM603-Abgasl.

1st version kW : 76.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 1.70...1.80
: (1.65...1.85)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.40...12.50

Del. quantity cm³/ : 3.1...3.2

100 s : (3.0...3.3)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 290

Rack travel in mm : 6.6...6.8

Del. quantity cm³/ : 0.5...0.6

100 s : (0.5...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del. quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees : 50...0

3rd rack travel in : 9,10...9,50

Speed rpm : 2500

4th rack travel in : 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,90...2,00

LOW IDLE 1

Control lever

position degrees : 13...17

Setting point w/out bumper spring

Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed      rpm      : 100
Del.quantity cm3/    : 52.0...0.0
            1000 s: (52.0...0.0)
Rack travel in mm   : 20.10...0.00
```

HIGH IDLE

```
1st version
Aneroid pressure h: 1100
Speed      rpm      : 2500
Rack travel in mm : 9.10...9.50
Del.quantity cm3/   : 22.0...26.0
              1000 s: (21.0...27.0)
Spread      cm3      : 2.50
              1000 s: (3.00)
```

LOW IDLE

```
Speed      rpm      : 290
Rack travel in mm : 6.60...6.80
Del.quantity cm3/  : 5.5...6.5
              1000 s: (5.0...9.5)
Spread      cm3     : 1.00
              1000 s: (1.50)
```

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

```
Control lever at idle stop
Speed      rpm      : 315
Rack travel in mm : (12,8...14,2)
Del.quantity cm3/  : -
              1000 s: (28,0...36,0)
```

```
Current A          : 1.8
Control lever at full-load stop
Speed             rpm : 2950
Rack travel in mm : 0.0...1.0
Current
```

short-duration A : 3,0

Starting test
Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: 52.0

Remarks:

Pin projection = 16.60...16.70 mm

Start-of-delivery spacing (difference)
between max/min value 1° cam angle

maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

- Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

CHECKING THE PNEUMATIC SHUTOFF BOX

- Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT

- Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, $16.3...16.7^{\circ}$
($16.2...16.8^{\circ}$) angular displacement of
the cam after cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 W23
Edition : 05.08.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 076 971
Injection pump
Pump designation : PES6M55C32CRS171
EP type number : 0 410 056 989
Governor
Governor design. : RSF315/2300M60-8
Governor no. : 0 420 021 114

Customer-spec. information
Customer : DB

Engine : OM603-ECE

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 3.2...3.3

100 s : (3.1...3.4)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 290

Rack travel in mm : 6.8...7.0

Del. quantity cm³/ : 0.5...0.6

100 s : (0.5...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees : 50...0

3rd rack travel in : 8,90...9,30

Speed rpm : 2500

4th rack travel in : 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,30...1,40

LOW IDLE 1

Control lever

position degrees : 11...15

Setting point w/out bumper spring

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 W24
Edition : 19.08.88
Replaces : --
Test oil : ISO-4113

Combination no. : 0 400 076 972

Injection pump
Pump designation : PES6M55C320RS171
EP type number : 0 410 056 989
Governor
Governor design. : RSF315/2300M72-1
Governor no. : 0 420 021 115

Customer-spec. information
Customer : DB

Engine : OM603-ECE

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY
Test pressure, bar : 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.60...12.70

Del. quantity cm³/ : 3.2...3.3

100 s : (3.1...3.4)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 300

Rack travel in mm : 6.8...7.0

Del. quantity cm³/ : 0.6...0.7

100 s : (0.6...1.0)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h : 1100

Del. quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees : 50...0

3rd rack travel in : 8.90...9.30

Speed rpm : 2500

4th rack travel in : 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1.3...1.4

LOW IDLE 1

Control lever

position degrees : 11...15

Setting point w/out bumper spring

STARTING FUEL DELIVERY

```
Speed      rpm      : 100
Del.quantity cm3/    : 52.0...0.0
              1000 s: (52.0...0.0)
Rack travel in mm  : 20.10...0.00
```

HIGH IDLE

1st version

```

Aneroid pressure h: 1100
Speed          rpm : 2500
Rack travel in mm : 8.90...9.30
Del.quantity cm3/ : 22.0...26.0
                1000 s: (21.0...27.0)
Spread         cm3 : 2.50
                1000 s: (3.00)

```

LOW IDLE

```
Speed      rpm      : 300
Rack travel in mm : 6.80...7.00
Del.quantity cm3/  : 6.5...7.5
              1000 s : (6.0...10.5)
Spread     cm3      : 1.00
              1000 s : (1.50)
```

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

```
Speed rpm : 315
Rack travel in mm : -
Del.quantity cm3/ : -
1000 s: -
Current A : 1,8
Control lever at full-load stop
Speed rpm : 2950
Rack travel in mm : 0,0...1,0
Current
short-duration A : 3,0
Starting test
Speed rpm : 100
Del.quantity cm3/ : -
min. 1000 s: 52,0
```

Remarks:

Pin projection = 16.60...16.70 mm

SETTING OF FBG

- Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°).

Cam angle according to cyl. 1.

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
With $n = 300$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 W20
Edition : 06.09.88
Replaces : 03.04.87
Test oil : ISO-4113

Combination no. : 0 400 076 973

Injection pump
Pump designation : PES6M55C320RS165
EP type number : 0 410 056 990
Governor
Governor design. : RSF315/2300M66-2
Governor no. : 0 420 021 099

Customer-spec. information
Customer : DB

Engine : OM603-3.0

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

K02

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 300.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 0.6...0.7

100 s: (0.6...1.0)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm3 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7.80...8.20

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 0.9...1.0

LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 300

STARTING FUEL DELIVERY

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

ADJUSTING ACTIVE JOLT DAMPING (ARD)

Control lever at full-load stop. With
 $n = 1000$ 1/min., $I = 2.5$ A, control-rod-
travel reduction = 2.25...2.55 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 W21
Edition : 06.09.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 076 976

Injection pump
Pump designation : PES6M55C32ORS157-1
EP type number : 0 410 056 991
Governor
Governor design. : RSF450/2300M68
Governor no. : 0 420 021 095

Customer-spec. information
Customer : DB

Engine : OM603A (3.0l)

1st version kW : 100,0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2,20...2,30
: (2,15...2,35)

Rack travel in mm : 20,00...22,00

Firing order : 1- 5- 3- 6- 2- 4

K05

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.10...13.20

Del. quantity cm³/ : 4.6...4.7

100 s: (4.5...4.8)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 450

Rack travel in mm : 5.4...5.6

Del. quantity cm³/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1850

Del. quantity : 46.5...47.5

1000 : (45.5...48.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 8,50...8,90

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 10...14

Setting point w/out bumper spring

Del.quantity cm3/ : 34.0...35.0
1000 s: (33.0...36.0)
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

```
Speed      rpm      : 100
Del.quantity cm3/    : 52.0...0.0
            1000 s : (52.0...0.0)
Rack travel in mm   : 20.10...0.00
```

HIGH IDLE

```
1st version
Aneroid pressure h: 1850
Speed      rpm      : 2500
Rack travel in mm : 8.50...8.90
Del.quantity cm3/   : 29.0...33.0
              1000 s: (28.0...34.0)
Spread      cm3      : 2.50
              1000 s: (3.00)
```

LOW IDLE

```
Speed      rpm      : 450
Rack travel in mm : 5.40...5.60
Del.quantity cm3/  : 5.5...6.5
              1000 s : (5.0...9.5)
Spread      cm3      : 1.00
              1000 s : (1.50)
```

SETTING PNEUMATIC FAST IDLE (FLA)

```
Speed      rpm      : 500
Rack travel in mm : (6,5...8,1)
Del.quantity cm3/  : -
            1000 s   : (12,0...20,0)
Vacuum      hPa     : 600
```

Remarks:

Pin projection = 16.60...16.70 mm

SETTING OF FBG

-Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°).
Cam angle according to cyl. 1.

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

CORRECTION OF INJECTED-FUEL QUANTITY

-Set max. change plus/minus 0.75 mm
control-rod travel at correction
screw on ALDA pressure box.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 3,0 W19
Edition : 06.09.88
Replaces : 21.08.87
Test oil : ISO-4113

Combination no. : 0 400 076 977

Injection pump
Pump designation : PES6M55C32ORS165
EP type number : 0 410 056 990
Governor
Governor design. : RSF315/2300M60-7
Governor no. : 0 420 021 092

Customer-spec. information
Customer : DB

Engine : OM603-3.0; MJ:88

1st version kW : 75.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1- 5- 3- 6- 2- 4

K08

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.70...12.80

Del. quantity cm³/ : 3.0...3.1

100 s: (2.9...3.2)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 290

Rack travel in mm : 6.9...7.1

Del. quantity cm³/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1100

Del. quantity : 30.5...31.5

1000 : (29.5...32.5)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 0...50

3rd rack travel in: 9,20...9,60

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 800

Rack travel in mm : 1,9...2,0

LOW IDLE 1

Control lever

position degrees: 10...14

Setting point w/out bumper spring

Speed rpm : 290
Rack travel in mm : 7.0

Testing:

Speed rpm : 220
Minimum rack travel: 7.00
Speed rpm : 290
Rack travel in mm : 6.90...7.10
Rack travel in mm : 2.50
Speed rpm : 630...730
Speed rpm : 800
Maximum rack travel: 2.00

SET IDLE AUXILIARY SPRING

Speed rpm : 360
Rack travel in mm : 5.50...5.70
: (5.40...5.80)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 800
Rack travel in m: 12.70...12.80
2nd speed rpm : 1600
Rack travel in m: 12.00...12.20
3rd speed rpm : 2200
Rack travel in m: 11.40...11.60

Aneroid/Altitude
Compensator Test

1st version

Measurement

Speed 1/min : 800

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1600
Del. quantity cm³/ : 31.5...33.0
1000 s: (30.5...34.0)
Spread cm³ : 2.50
1000 s: (3.)
Aneroid pressure h: 1100
Speed rpm : 2200
Del. quantity cm³/ : 32.0...34.0
1000 s: (31.0...35.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

K09

Speed rpm : 100
Del. quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2500
Rack travel in mm : 9.20...9.60
Del. quantity cm³/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 290
Rack travel in mm : 6.90...7.10
Del. quantity cm³/ : 5.5...6.5
1000 s: (5.0...9.5)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop

Speed rpm : 315
Rack travel in mm : (13.0...14.4)
Del. quantity cm³/ : -
1000 s: (28.0...36.0)

Current A : 1.8

Control lever at full-load stop

Speed rpm : 2950
Rack travel in mm : 0.0...1.0
Current

short-duration A : 3.0

Starting test

Speed rpm : 100
Del. quantity cm³/ : -
min. 1000 s: 52.0

Remarks:

Pin projection = 16.60...16.70 mm

SETTING OF FBG

-Setting and locking of FBG according
to start-of-delivery average of all
cylinders 19.3...19.7° (19.2...19.8°).
Cam angle according to cyl. 1.

Start-of-delivery spacing (difference)
between max/min value 1° cam angle
maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX

-Control lever up against idle stop.
At $n = 290$ 1/min and $p_u = 450$ mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49° , max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5° ,
control-rod travel deduction must be
greater than 0.2 mm after switchover
point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 i 2
Edition : 26.08.88
Replaces : 11.12.87
Test oil : ISO-4113

Combination no. : 0 400 646 275

Injection pump
Pump designation : PE6A95D41QLS2621
EP type number : 0 410 696 982
Governor
Governor design. : RQ300/1250AB1148-1L
Governor no. : 0 420 200 104

Customer-spec. information
Customer : KHD

Engine : F6L413F

1st version kW : 141.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.00...2.10
(1.95...2.15)

Rack travel in mm : 9.00...12.00

K11

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.40...10.50

Del. quantity cm³/ : 9.2...9.4

100 s : (9.0...9.6)

Spread cm³ : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del. quantity cm³/ : 0.8...1.4

100 s : (0.5...1.6)

Spread cm³ : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 16.80...18.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 17.6

Testing:

1st rack travel in : 9.40

Speed rpm : 1295...1310

2nd rack travel in : 4.00

Speed rpm : 1325...1355

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 100

Minimum rack trave: 7.90

Speed rpm : 300

Rack travel in mm : 6.40...6.60

Rack travel in mm : 2.00

Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.17

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.40...10.50

2nd speed rpm : 600

Rack travel in m: 10.90...11.00

3rd speed rpm : 915

Rack travel in m: 10.70...10.90

4th speed rpm : 980

Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650

Del.quantity cm3/ : 91.5...94.5

1000 s: (89.0...97.0)

RACK STOP ADJUSTMENT

Speed rpm : 650

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 15.30...15.60

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

4- 3

Note remarks

Test sheet : KHD 12,7 p5
 Edition : 05.08.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 648 111
 Injection pump
 Pump designation : PE8A95D410LS2608
 EP type number : 0 410 698 988
 Governor
 Governor design. : RQ300/1250AB987DL
 Governor no. : 0 420 202 277

Customer-spec. information
 Customer : KHD

Engine : F8L413F

1st version kW : 188.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-

K13

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.00...10.10

Del. quantity cm³/ : 9.2...9.4

100 s: (9.0...9.6)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm³ : 0.5

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del. quantity : 92.0...94.0

1000 : (90.0...96.0)

Spread cm³ : 3.00

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

Testing:

1st rack travel in: 9.00

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1335...1365

4th rack travel in: 1450

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0

Testing:

Speed rpm : 100

Minimum rack trave: 7.50

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 345...385

Speed rpm : 550

Maximum rack trave: 1.00

TORQUE CONTROL

Dimension a mm : 0.28

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.00...10.10

2nd speed rpm : 550

Rack travel in m: 10.60...10.70

3rd speed rpm : 850

Rack travel in m: 10.40...10.60

4th speed rpm : 970

Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750

Del.quantity cm3/ : 90.5...93.5

1000 s: (88.0...96.0)

RACK STOP ADJUSTMENT

Speed rpm : 600

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00

Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...135.0

1000 s: (117.0...138.0)

Rack travel in mm : 14.00...15.00

LOW IDLE

K14

Speed rpm : 300

Rack travel in mm : 5.90...6.10

Del.quantity cm3/ : 9.0...15.0

1000 s: (6.5...17.5)

Spread cm3 : 5.00

1000 s: (5.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 8,3 k 6
 Edition : 20.05.88
 Replaces : 7.11.86
 Test oil : ISO-4113

Combination no. : 0 400 676 184

Injection pump
 Pump designation : PE6A95D41ORS2525
 EP type number : 0 410 696 987
 Governor
 Governor design. : RSV250...1200ASC2199
 -1L
 Governor no. : 0 420 232 450

Customer-spec. information
 Customer : DAF

Engine : DHTD 825

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 7.50...10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm : 1000

 Rack travel in mm : 12.60...12.70

 Del.quantity cm3/ : 10.9...11.0

 100 s: (10.7...11.2)

 Spread cm3 : 0.3

 100 s: (0.6)

 2nd speed rpm : 250.0
 Rack travel in mm : 6.0...6.2
 Del.quantity cm3/ : 0.7...1.1
 100 s: (0.4...1.3)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Aneroid pressure h: 700
 Del.quantity : 109.0...110.0
 1000 : (107.0...112.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 51...59

Testing:

1st rack travel in: 11.60
Speed rpm : 1230...1240
2nd rack travel in: 4.00
Speed rpm : 1290...1320
3rd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1490
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.6
Speed rpm : 250
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 445...505

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 13.40...13.50
2nd speed rpm : 400
Rack travel in m: 13.60...13.70
3rd speed rpm : 300
Rack travel in m: 13.80...14.30

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 1000
Pressure hPa : 700
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 1000

1st pressure hPa : -
Rack travel in m: 11.60...11.70
2nd pressure hPa : 300
Rack travel in m: 12.30...12.40
3rd pressure hPa : 280
Rack travel in m: 11.90...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600
Del.quantity cm3/ : 85.5...86.5
1000 s: (83.5...88.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 1230...1240

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...140.0
1000 s: (127.0...143.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 10,8 l
Edition : 11.07.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 676 190

Injection pump
Pump designation : PE6A95D32ORS2557-1R
EP type number : 0 410 696 980
Governor
Governor design. : RSV350...1100A8C2217
-1R
Governor no. : 0 420 233 220.

Customer-spec. information
Customer : HANOMAG

Engine : D964 T/60E

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
: (2.10...2.30)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1080
Rack travel in mm : 10.40...10.50
Del. quantity cm³/ : 9.2...9.4
100 s : (9.0...9.6)
Spread cm³ : 0.3
100 s : (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.5...6.7
Del. quantity cm³/ : 1.0...1.6
100 s : (0.7...1.8)
Spread cm³ : 0.3
100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1080
Del. quantity : 92.5...94.5
1000 : (90.5...96.5)
Spread cm³ : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 9.40
Speed rpm : 1120...1130
2nd rack travel in: 4.00
Speed rpm : 1160...1190
3rd rack travel in: 4.00
Speed rpm : 1185...1215

4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 20...28
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 6.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.00...6.20
Rack travel in mm : 2.00
Speed rpm : 505...565

TORQUE CONTROL

Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 10.40...10.50
2nd speed rpm : 500
Rack travel in m: 11.10...11.20
3rd speed rpm : 880
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 90.5...93.5
1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

Cold-start testing of RSV governor
according to VDT-I-420/114.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a
 Edition : 11.07.88
 Replaces : 24.7.87
 Test oil : ISO-4113

Combination no. : 0 400 844 083

Injection pump
 Pump designation : PES4A90D410RS2666
 EP type number : 0 410 894 029
 Governor
 Governor design. : RQV300...1400AB1065-SL
 Governor no. : 0 420 212 169

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400
 Rack travel in mm : 10.90...11.00
 Del. quantity cm³/ : 6.3...6.4
 100 s : (6.1...6.6)

Spread cm³ : 0.3
 100 s : (0.5)

2nd speed rpm : 300.0
 Rack travel in mm : 8.6...8.8
 Del. quantity cm³/ : 0.8...1.2
 100 s : (0.6...1.4)

Spread cm³ : 0.2
 100 s : (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del. quantity : 63.0...64.0
 1000 : (61.0...66.0)
 Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees : 58...66

Testing:
 1st rack travel in : 9.90

Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1560...1590
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 20...28

Testing:
Speed rpm : 100
Minimum rack trave: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.90...11.00
2nd speed rpm : 630
Rack travel in m: 12.20...12.30
3rd speed rpm : 900
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 630
Del.quantity cm3/ : 55.5...58.5
1000 s: (53.0...61.0)
Speed rpm : 900
Del.quantity cm3/ : 54.5...57.5
1000 s: (52.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

K20

Remarks:

:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 1
 Edition : 05.08.88
 Replaces : 12.9.86
 Test oil : ISO-4113

Combination no. : 0 400 844 084

Injection pump
 Pump designation : PES4A90D41ORS2666
 EP type number : 0 410 894 029
 Governor
 Governor design. : RQV300...1400AB1201-1L
 Governor no. : 0 420 212 176

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 6.3...6.4
 100 s : (6.1...6.6)

Spread cm³ : 0.3
 100 s : (0.4)

2nd speed rpm : 300.0
 Rack travel in mm : 8.6...8.8
 Del. quantity cm³/ : 0.8...1.2
 100 s : (0.6...1.4)

Spread cm³ : 0.2
 100 s : (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1500
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del. quantity : 63.5...64.5
 1000 : (61.5...66.5)

Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 9.90
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1550...1580
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 20...28

Testing:
Speed rpm : 100
Minimum rack travel: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.90...11.00
2nd speed rpm : 500
Rack travel in m: 11.90...12.00
3rd speed rpm : 700
Rack travel in m: 11.60...11.90
4th speed rpm : 900
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del. quantity cm³/ : 50.0...53.0
1000 s: (47.5...55.5)
1000 s: (5.)
Speed rpm : 900
Del. quantity cm³/ : 52.5...55.5
1000 s: (50.0...58.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.90

K22

Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 3
 Edition : 11.07.88
 Replaces : 30.3.87
 Test oil : ISO-4113
 Combination no. : 0 400 844 087
 Injection pump
 Pump designation : PES4A90D41ORS2666
 EP type number : 0 410 894 029
 Governor
 Governor design. : RQV300...1400AB1065-SL
 Governor no. : 0 420 212 169

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 8.6...8.8

Del. quantity cm³/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 63.0...64.0

1000 : (61.0...66.0)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 9.90

Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1560...1590
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 20...28

Testing:
Speed rpm : 100
Minimum rack trave: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.90...11.00
2nd speed rpm : 630
Rack travel in m: 12.20...12.30
3rd speed rpm : 900
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 630
Del.quantity cm3/ : 55.5...58.5
1000 s: (53.0...61.0)
Speed rpm : 900
Del.quantity cm3/ : 54.5...57.5
1000 s: (52.0...60.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

:
Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 4
 Edition : 11.07.88
 Replaces : 9.3.87
 Test oil : ISO-4113

Combination no. : 0 400 844 088

Injection pump
 Pump designation : PES4A90D41ORS2666
 EP type number : 0 410 894 029
 Governor
 Governor design. : RQV300...1400AB1065-10L
 Governor no. : 0 420 212 203

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.6...8.8

Del. quantity cm³/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 63.5...64.5

1000 : (61.5...66.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 9.90

Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1545...1575
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 20...28

Testing:

Speed rpm : 100
Minimum rack trave: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

Speed rpm : 540...680

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.90...11.00
2nd speed rpm : 500
Rack travel in m: 11.90...12.00
3rd speed rpm : 700
Rack travel in m: 11.50...11.80
4th speed rpm : 900
Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 50.0...53.0
1000 s: (47.5...55.5)
1000 s: (5.)
Speed rpm : 900
Del.quantity cm3/ : 52.5...55.5
1000 s: (50.0...58.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100

K26

Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 16.60...17.00

Remarks:

:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 a 10
Edition : 11.07.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 844 089
Injection pump
Pump designation : PES4A90D41ORS2666
EP type number : 0 410 894 029
Governor
Governor design. : RQV300...1400AB1065-10L
Governor no. : 0 420 212 203

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 66.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

K27

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del. quantity cm³/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.6...8.8

Del. quantity cm³/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 63.5...64.5

1000 : (61.5...66.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:

1st rack travel in: 9.90
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1545...1575
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 17...25

Testing:

Speed rpm : 100
Minimum rack travel: 10.20
Speed rpm : 300
Rack travel in mm : 8.60...8.80

CONSTANT REGULATION

Speed rpm : 540...680

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 10.90...11.00
2nd speed rpm : 500
Rack travel in m: 11.90...12.00
3rd speed rpm : 700
Rack travel in m: 11.60...11.90
4th speed rpm : 900
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 50.0...53.0
1000 s: (47.5...55.5)
Spread cm³ : -
1000 s: (5.5)
Speed rpm : 900
Del.quantity cm³/ : 52.5...55.5
1000 s: (50.0...58.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.90
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 16.60...17.00

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 7,0 c 1
Edition : 5.9.88
Replaces : 11.12.87
Test oil : ISO-4113

Combination no. : 0 400 846 264

Injection pump
Pump designation : PES6A85D320RS2337
EP type number : 0 410 886 921
Governor
Governor design. : RQ200/1250AB801DR
Governor no. : 0 420 203 089

Customer-spec. information
Customer : MAN

Engine : D0846HM42U

1st version kW : 118.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
: (1.45...1.65)
Rack travel in mm : 9.00...12.00

L01

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 7.0...7.1

100 s: (6.8...7.3)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 200.0

Rack travel in mm : 8.4...8.6

Del.quantity cm3/ : 1.8...2.4

100 s: (1.6...2.6)

Spread cm3 : -

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 550

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 70.0...71.0

1000 : (68.0...73.0)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.75

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1335...1365

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 200

Rack travel in mm : 8.5

Testing:

Speed rpm : 100

Minimum rack trave: 9.90

Speed rpm : 200

Rack travel in mm : 8.40...8.60

Rack travel in mm : 2.00

Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.70...10.80

2nd speed rpm : 500

Rack travel in m: 11.40...11.50

4th speed rpm : 1000

Rack travel in m: 11.10...11.30

5th speed rpm : 1125

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500

Del.quantity cm3/ : 0.0...69.5

1000 s: (0.0...72.0)

Speed rpm : 800

Del.quantity cm3/ : 69.0...72.0

1000 s: (66.5...74.5)

RACK STOP ADJUSTMENT

Speed rpm : 200

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.75

Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 123.0...133.0

1000 s: (120.0...136.0)

Rack travel in mm : 18.10...18.50

Remarks:

: MAN-NR. 1-7504

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 9,6 k 5
 Edition : 08.06.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 432
 Injection pump
 Pump designation : PES6A95D410RS2416
 EP type number : 0 410 896 961
 Governor
 Governor design. : RQ750AB1054L
 Governor no. : 0 420 200 063

Customer-spec. information
 Customer : KHD

Engine : F6L413FR

1st version kW : 90.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X-600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)
 Rack travel in mm : 9.00...12.00

L03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.40...10.50

Del. quantity cm³/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.3...5.5

Del. quantity cm³/ : 1.0...1.6

100 s: (0.7...1.8)

Spread cm³ : 0.3

100 s: (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 9.40

Speed rpm : 750...755

2nd rack travel in: 3.70

Speed rpm : 775...785

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 10.40...10.50

2nd speed rpm : 500

Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 640 (660)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 120.0...130.0

1000 s: (117.0...133.0)

Rack travel in mm : 12.90...13.20

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,1 x
Edition : 5.9.88
Replaces : 10.3.88
Test oil : ISO-4113
Combination no. : 0 400 846 441
Injection pump
Pump designation : PES6A9SD410LS2607
EP type number : 0 410 896 936
Governor
Governor design. : RQV750AB955L
Governor no. : 0 420 212 073

Customer-spec. information
Customer : MAN

Engine : D2566 ME

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 1.50...1.60
: (1.45...1.65)
Rack travel in mm : 9.00...12.00
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 12.00...12.10
Del. quantity cm³/ : 11.8...12.0
100 s : (11.6...12.2)
Spread cm³ : 0.3
100 s : (0.6)

2nd speed rpm : 250
Rack travel in mm : ?
Del. quantity cm³/ : 0.9...1.5
100 s : (-)
Spread cm³ : 0.3
100 s : (0.5)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del. quantity : 118.0...120.0
1000 : (116.0...122.0)
Spread cm³ : 3.0
1000 : (6.0)

RATED SPEED

1st version
Control lever
position degrees : 25...33

Testing:
1st rack travel in : 11.00
Speed rpm : 750...755
2nd rack travel in : 4.00
Speed rpm : 770...780

Remarks : MAN-NR. 2-7053

APPLICATION
Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 v 2
 Edition : 11.07.88
 Replaces : 10.85
 Test oil : ISO-4113

Combination no. : 0 400 846 443

Injection pump
 Pump designation : PES6A90D410RS2596
 EP type number : 0 410 896 073
 Governor
 Governor design. : RQV300...1400AB1066-1DL
 Governor no. : 0 420 214 251

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM352A

1st version kW : 126.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

L06

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400
 Rack travel in mm : 12.40...12.50
 Del. quantity cm³/ : 7.4...7.5
 100 s: (7.2...7.7)

Spread cm³ : 0.3
 100 s: (0.4)

2nd speed rpm : 300.0
 Rack travel in mm : 8.9...9.1
 Del. quantity cm³/ : 0.9...1.5
 100 s: (0.7...1.7)

Spread cm³ : 0.2
 100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1500
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Aneroid pressure h: 700
 Del. quantity : 74.0...75.0
 1000 : (72.0...77.0)

Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 52...600

Testing:
1st rack travel in: 11.40
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1580...1610
4th rack travel in: 1750
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 14...22

Testing:
Speed rpm : 100
Minimum rack travel: 10.50
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 590...660

TORQUE CONTROL
Dimension a mm : 0.70
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 12.40...12.50
2nd speed rpm : 700
Rack travel in m: 13.70...13.80
3rd speed rpm : 1000
Rack travel in m: 13.30...13.50
4th speed rpm : 1200
Rack travel in m: 12.60...12.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.70...13.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.30...12.40
2nd pressure hPa : 350
Rack travel in m: 13.20...13.30
3rd pressure hPa : 225
Rack travel in m: 12.60...12.80

START CUT-OUT

L07

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 700
Del.quantity cm³/ : 74.0...78.0
1000 s: (71.5...80.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 55.0...57.0
1000 s: (53.0...59.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.40
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 73.0...83.0
1000 s: (70.0...86.0)
Rack travel in mm : 15.40...15.80

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,ip25
 Edition : 08.06.88
 Replaces : 11.12.87
 Test oil : ISO-4113
 Combination no. : 0 400 846 510
 Injection pump
 Pump designation : PES6A95D410LS2542
 EP type number : 0 410 896 936
 Governor
 Governor design. : RQ250/1100AB1137-9L
 Governor no. : 0 420 200 091

Customer-spec. information
 Customer : MAN

Engine : D2566MUH

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
 : (1.45...1.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 10.0...10.3

100 s: (9.8...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 7.4...7.6

Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 100.0...103.0

1000 : (98.0...105.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.00

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1225...1255

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack travel: 7.90
Speed rpm : 250
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.65
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.00...11.10
2nd speed rpm : 600
Rack travel in m: 12.40...12.50
3rd speed rpm : 870
Rack travel in m: 12.00...12.20
4th speed rpm : 955
Rack travel in m: 11.20...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 107.5...111.5
1000 s: (105.0...114.0)
Speed rpm : 700
Del.quantity cm3/ : 108.5...110.5
1000 s: (106.0...113.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 121.5...131.5
1000 s: (118.5...134.5)
Rack travel in mm : 13.00...13.60

Remarks:

:

Set idle stop at 250 min -1 to a
control-rod travel of 6.5 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 a
Edition : 11.07.88
Replaces : 16.10.87
Test oil : ISO-4113

Combination no. : 0 400 846 522

Injection pump
Pump designation : PES6A90D410RS2667
EP type number : 0 410 896 080
Governor
Governor design. : RQV300...1400AB1065-4L
Governor no. : 0 420 212 168

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 100.0
Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
: (2.20...2.40)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400
Rack travel in mm : 11.10...11.20
Del. quantity cm³/ : 6.3...6.4
100 s : (6.1...6.6)

Spread cm³ : 0.3
100 s : (0.4)

2nd speed rpm : 300.0
Rack travel in mm : 8.9...9.1
Del. quantity cm³/ : 0.9...1.3
100 s : (0.7...1.5)

Spread cm³ : 0.2
100 s : (0.4)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 0.80...1.30
2nd speed rpm : 500
travel mm : 2.30...2.80
3rd speed rpm : 750
travel mm : 4.10...4.30
4th speed rpm : 1500
travel mm : 8.50...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1400
Del. quantity : 63.5...64.5
1000 : (61.5...66.5)

Spread cm³ : 3.00
1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:
1st rack travel in: 10.10

Speed rpm : 1460...1470
2nd rack travel in: 4.00
Speed rpm : 1560...1590
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 21...29

Testing:
Speed rpm : 100
Minimum rack trave: 10.30
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.10
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 12.20...12.30
3rd speed rpm : 900
Rack travel in m: 11.70...11.90
4th speed rpm : 1100
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del.quantity cm3/ : 52.0...54.0
1000 s: (49.5...56.5)
Speed rpm : 900
Del.quantity cm3/ : 55.0...58.0
1000 s: (52.5...60.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1460...1470

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

:
Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 a 1
 Edition : 11.07.88
 Replaces : 6.85
 Test oil : ISO-4113
 Combination no. : 0 400 846 535
 Injection pump
 Pump designation : PES6A90D41ORS2667
 EP type number : 0 410 896 080
 Governor
 Governor design. : RQV300...1400AB1201L
 Governor no. : 0 420 212 175

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 100.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00

L12

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.10...11.20

Del. quantity cm³/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.9...9.1

Del. quantity cm³/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 63.5...64.5

1000 : (61.5...66.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever
position degrees: 59...67

Testing:

1st rack travel in: 10.10
Speed rpm : 1440...1450
2nd rack travel in: 4.00
Speed rpm : 1545...1575
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 21...29

Testing:

Speed rpm : 100
Minimum rack travel: 10.50
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION

Speed rpm : 540...680

TORQUE CONTROL

Dimension a mm : 1.10
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 12.20...12.30
3rd speed rpm : 900
Rack travel in m: 11.70...11.90
4th speed rpm : 1100
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm³/ : 51.0...54.0
1000 s: (48.5...56.5)
Spread cm³ : -
1000 s: (5.50)
Speed rpm : 900
Del.quantity cm³/ : 53.5...56.5
1000 s: (51.0...59.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 16.80...17.20

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.90...9.10
Del.quantity cm³/ : 9.0...15.0
1000 s: (7.0...17.0)
Spread cm³ : 2.50
1000 s: (4.50)

Remarks:

:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 1
Edition : 30.05.88
Replaces : 28.10.86
Test oil : ISO-4113

Combination no. : 0 400 846 537

Injection pump
Pump designation : PES6A95D32ORS2693Z
EP type number : 0 410 896 913
Governor
Governor design. : RQ300/1300AB1204R
Governor no. : 0 420 201 640

Customer-spec. information
Customer : DAF

Engine : DNS 620

1st version kW : 150.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 7.50...10.50

L14

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 0.30...0.60

Del. quantity cm³/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del. quantity cm³/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 820

Rack travel in mm : 16.80...18.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del. quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 820

Rack travel in mm : 17.6

Testing:

1st rack travel in: 10.70
Speed rpm : 1345...1360
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack travel: 7.30
Speed rpm : 300
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 525...565

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 0.00...0.20
2nd speed rpm : 850
Rack travel in m: 1.30...1.60
3rd speed rpm : 965
Rack travel in m: 0.80...1.20
4th speed rpm : 1060
Rack travel in m: 0.30...0.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.20...11.40
2nd pressure hPa : 290
Rack travel in m: 12.00...12.10
3rd pressure hPa : 250
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 1290
Del.quantity cm3/ : 86.0...88.0
1000 s: (83.5...90.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 65.0...67.0
1000 s: (63.0...69.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1345...1360

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...145.0
1000 s: (127.0...148.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

When adjusting the governor, observe
service information on microcard
W-400/008.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p 2
Edition : 30.05.88
Replaces : 12.9.86
Test oil : ISO-4113

Combination no. : 0 400 846 538

Injection pump
Pump designation : PES6A95D32ORS2693
EP type number : 0 410 896 914
Governor
Governor design. : RQ300/1300AB1204R
Governor no. : 0 420 201 640

Customer-spec. information
Customer : DAF

Engine : DNT 620

1st version kW : 130.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 0.70...0.90

Del. quantity cm3/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del. quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 850

Rack travel in mm : 16.80...18.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del. quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 850

Rack travel in mm : 17.6

Testing:

1st rack travel in: 9.70
Speed rpm : 1350...1365
2nd rack travel in: 4.00
Speed rpm : 1420...1450
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack travel: 7.30
Speed rpm : 300
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 525...565

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 1290
Rack travel in m: 0.00...0.10
2nd speed rpm : 850
Rack travel in m: 1.40...1.60
3rd speed rpm : 935
Rack travel in m: 1.00...1.30
4th speed rpm : 1080
Rack travel in m: 0.20...0.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 700
Rack travel mm : 11.50...11.60

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.20...11.40
2nd pressure hPa : 250
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 1290
Del.quantity cm3/ : 72.0...74.0
1000 s: (69.5...76.5)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 65.0...67.0
1000 s: (63.0...69.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1350...1365

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...145.0
1000 s: (127.0...148.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del.quantity cm3/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

When adjusting the governor, observe
service information on microcard
W-400/008.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6,2 p
Edition : 30.05.88
Replaces : 12.9.86
Test oil : ISO-4113

Combination no. : 0 400 846 539

Injection pump
Pump designation : PES6A95D32CRS2693
EP type number : 0 410 896 914
Governor
Governor design. : RQ300/1300AB1205R
Governor no. : 0 420 201 642

Customer-spec. information
Customer : DAF

Engine : DNTD 620

1st version kW : 110.0
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X500

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 7.50...10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 0.40...0.60

Del.quantity cm3/ : 6.4...6.6

100 s: (6.2...6.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 850

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Del.quantity : 64.0...66.0

1000 : (62.0...68.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 850

Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.30
Speed rpm : 1335...1350
2nd rack travel in: 4.00
Speed rpm : 1400...1430
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:

Speed rpm : 100
Minimum rack travel: 7.30
Speed rpm : 300
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00
Speed rpm : 525...565

TORQUE CONTROL

Dimension a mm : 0.35
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 0.80...1.10
2nd speed rpm : 1290
Rack travel in m: 0.00...0.10
3rd speed rpm : 970
Rack travel in m: 0.50...0.80
4th speed rpm : 1050
Rack travel in m: 0.00...0.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1290
Del. quantity cm³/ : 69.0...71.0
1000 s: (66.5...73.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1335...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 130.0...145.0
1000 s: (127.0...148.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Del. quantity cm³/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 5.9 a 3
 Edition : 5.9.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 546
 Injection pump
 Pump designation : PES6A90D410RS2713
 EP type number : 0 410896 083
 Governor
 Governor design. : RQV300...1350AB1175-2L
 Governor no. : 0 420 212 187

Customer-spec. information
 Customer : FIAT

Engine : 8060.25.620

1st version kW : 110.0
 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 60 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.20...2.30
 : (2.15...2.35)

Rack travel in mm : 9.00...12.00
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 13.00...13.10

Del. quantity cm³/ : 7,6...7,7

100 s : (7,4...7,9)

Spread cm³ : 0,3

100 s : (0,5)

2nd speed rpm : 300
 Rack travel in mm : 9,70...9,90

Del. quantity cm³/ : 1,0...1,6

100 s : (0,8...1,8)

Spread cm³ : 0,25

100 s : (0,45)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.00

2nd speed rpm : 435
 travel mm : 2.40...2.60

3rd speed rpm : 775
 travel mm : 4.20...4.40

4th speed rpm : 1350
 travel mm : 8.20...8.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h : 700

Del. quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm³ : 3.0

1000 : (5.0)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 12.00
Speed rpm : 1390...1400
2nd rack travel in: 4.00
Speed rpm : 1535...1565
4th rack travel in: 1675
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 13...21

Testing:

Speed rpm : 100
Minimum rack travel: 11.20
Speed rpm : 300
Rack travel in mm : 9.70...9.90

CONSTANT REGULATION

Speed rpm : 350...450

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1350
Rack travel in m: 13.00...13.10
2nd speed rpm : 500
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.90...12.00
2nd pressure hPa : 290
Rack travel in m: 12.70...12.80
3rd pressure hPa : 260
Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700

L21

Speed rpm : 800
Del.quantity cm3/ : 68.5...70.5
1000 s: (66.0...73.0)
Spread cm3 : -
1000 s: (-)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 45.0...47.0
1000 s: (43.0...49.0)
Spread cm3 : -
1000 s: (-)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.00
Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0...125.0
1000 s: (112.0...128.0)

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 a 5
 Edition : 11.07.88
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 846 560

Injection pump
 Pump designation : PES6A90D410RS2667
 EP type number : 0 410 896 080
 Governor
 Governor design. : RQV300...1400AB1065-11L
 Governor no. : 0 420 212 204

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 100.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1,50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

 Rack travel in mm : 11.10...11.20

 Del. quantity cm³/ : 6.3...6.4

 100 s : (6.1...6.6)

 Spread cm³ : 0.3

 100 s : (0.4)

2nd speed rpm : 300.0
 Rack travel in mm : 8.9...9.1
 Del. quantity cm³/ : 0.9...1.3
 100 s : (0.7...1.5)
 Spread cm³ : 0.2
 100 s : (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30
 2nd speed rpm : 500
 travel mm : 2.30...2.80
 3rd speed rpm : 750
 travel mm : 4.10...4.30
 4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1500
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1400
 Del. quantity : 63.5...64.5
 1000 : (61.5...66.5)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:
1st rack travel in: 10.10
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1555...1585
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 21...29

Testing:
Speed rpm : 100
Minimum rack travel: 10.30
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Dimension a mm : 1.20
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 12.30...12.40
3rd speed rpm : 900
Rack travel in m: 11.80...12.00
4th speed rpm : 1100
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del. quantity cm³/ : 52.0...54.0
1000 s: (49.5...56.5)
Speed rpm : 900
Del. quantity cm³/ : 53.5...56.5
1000 s: (51.0...59.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1450...1460

L23

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:
:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 d 1
 Edition : 11.07.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 846 561
 Injection pump
 Pump designation : PES6A90D41ORS2710
 EP type number : 0 410 896 082
 Governor
 Governor design. : RQV300...1400AB1065-4L
 Governor no. : 0 420 212 168

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 100.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.10...11.20

Del. quantity cm³/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 8.9...9.1

Del. quantity cm³/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm³ : 0.2

100 s: (0.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.80...1.30

2nd speed rpm : 500
 travel mm : 2.30...2.80

3rd speed rpm : 750
 travel mm : 4.10...4.30

4th speed rpm : 1500
 travel mm : 8.50...8.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 63.5...64.5

1000 : (61.5...66.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version
Control lever
position degrees: 61...69

Testing:
1st rack travel in: 10.10
Speed rpm : 1450...1460
2nd rack travel in: 4.00
Speed rpm : 1555...1585
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 21...29

Testing:
Speed rpm : 100
Minimum rack travel: 10.30
Speed rpm : 300
Rack travel in mm : 8.90...9.10

CONSTANT REGULATION
Speed rpm : 540...680

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 12.30...12.40
3rd speed rpm : 900
Rack travel in m: 11.80...12.00
4th speed rpm : 1100
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 500
Del. quantity cm³/ : 52.0...54.0
1000 s: (49.5...56.5)
Speed rpm : 900
Del. quantity cm³/ : 53.5...56.5
1000 s: (51.0...59.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 17.00...17.40

Remarks:

Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,4 h1
Edition : 05.08.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 846 565
Injection pump
Pump designation : PES6A95D41OLS2669
EP type number : 0 410 896 921
Governor
Governor design. : RQ750AB1172-1L
Governor no. : 0 420 200 109

Customer-spec. information
Customer : MAN

Engine : D2566 ME

1st version kW : 114.0
Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60
: (1.45...1.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.00

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 775...785

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 12.10...12.20

2nd speed rpm : 500

Rack travel in m: 12.10...12.30

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

APPLICATION

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 3,1 b 1
Edition : 19.05.88
Replaces : 19.2.88
Test oil : ISO-4113

Combination no. : 0 400 863 008

Injection pump
Pump designation : PES3A90D320/3RS2658
EP type number : 0 410 893 004
Governor
Governor design. : RSV325...1500A2C505-2R
Governor no. : 0 420 233 196

Customer-spec. information
Customer : MWM

Engine : D226B-3

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del. quantity cm³/ : 8.9...9.0

100 s: (8.7...9.2)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0
Rack travel in mm : 10.0...10.2
Del. quantity cm³/ : 4.6...5.2
100 s: (4.4...5.4)

Spread cm³ : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3

Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del. quantity : 89.5...90.5
1000 : (87.5...92.5)

Spread cm³ : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 35...43

Testing:
1st rack travel in: 10.20
Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1200...1230
3rd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1325
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 9.6
Speed rpm : 325
Rack travel in mm : 10.00...10.20
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 500
Rack travel in m: 11.20...11.40

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 115.0
1000 s: (112.0)
Rack travel in mm : 16.80...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 3,1 b 2
Edition : 11.07.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 863 008

Injection pump
Pump designation : PES3A90D320/3RS2658
EP type number : 0 410 893 004
Governor
Governor design. : RSV325...1500A2C505-3R
Governor no. : 0 420 233 229

Customer-spec. information
Customer : MWM

Engine : D226B-3

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 9.00...12.00
Firing order : 1- 2- 3

MO2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del. quantity cm³/ : 8.9...9.0

100 s: (8.7...9.2)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0
Rack travel in mm : 10.0...10.2
Del. quantity cm³/ : 4.6...5.2
100 s: (4.4...5.4)
Spread cm³ : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Del. quantity : 89.5...90.5
1000 : (87.5...92.5)
Spread cm³ : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 35...43

Testing:
1st rack travel in: 10.20
Speed rpm : 1140...1150

2nd rack travel in: 4.00
Speed rpm : 1200...1230
3rd rack travel in: 4.00
Speed rpm : 1205...1235
4th rack travel in: 1325
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 9.6
Speed rpm : 325
Rack travel in mm : 10.00...10.20
Rack travel in mm : 2.00
Speed rpm : 480...540

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.20...11.30
2nd speed rpm : 500
Rack travel in m: 11.20...11.40

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 115.0
1000 s: (112.0)
Rack travel in mm : 16.80...21.00

Remarks:

;

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 3,0 d
Edition : 19.08.88
Replaces : 9.3.87
Test oil : ISO-4113

Combination no. : 0 400 863 013

Injection pump
Pump designation : PES3A90D410/3RS2740
EP type number : 0 410 893 006
Governor
Governor design. : RSV325...1150A0C2219
L
Governor no. : 0 420 232 466

Customer-spec. information
Customer : KHD

Engine : F3L913G

1st version kW : 36.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 2

Phasing : 0-120-240
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.20...9.30

Del. quantity cm3/ : 5.3...5.4
100 s: (5.1...5.6)

Spread cm3 : 0.3
100 s: (0.5)

2nd speed rpm : 375.0
Rack travel in mm : 5.9...6.1
Del. quantity cm3/ : 1.1...1.7
100 s: (0.9...1.9)
Spread cm3 : 0.2
100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del. quantity : 53.5...54.5
1000 : (51.5...56.5)
Spread cm3 : 3.00
1000 : (5.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 8.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1120...1150
3rd rack travel in: 4.00

Speed rpm : 1135...1165
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 375
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL

Dimension a mm : 0.25
Torque control curve - 1st version
1st speed rpm : 700
Rack travel in m: 9.20...9.30
2nd speed rpm : 350
Rack travel in m: 9.30...9.60
3rd speed rpm : 1050
Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 350
Del.quantity cm3/ : 45.0...47.0
1000 s: (42.5...49.5)
Speed rpm : 1050
Del.quantity cm3/ : 63.0...65.0
1000 s: (60.5...67.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 57.0...67.0
1000 s: (54.0...70.0)
Rack travel in mm : 10.70...10.90

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 35
 Edition : 05.08.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 863 014
 Injection pump
 Pump designation : PES3A85D410/3RS2642
 EP type number : 0 410 883 989
 Governor
 Governor design. : RSV325...1000A8C2102
 -2L
 Governor no. : 0 420 232 507

Customer-spec. information
 Customer : KHD

Engine : F3L913

1st version kW : 37,0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1,00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2,50...2,60
 : (2,45...2,65)

MD6

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.00...10.10

Del.quantity cm3/ : 6.2...6.3

100 s: (6.0...6.5)

Spread cm3 : 0,3

100 s: (0,5)

2nd speed rpm : 325,0

Rack travel in mm : 7.5...7.7

Del.quantity cm3/ : 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0,2

100 s: (0,4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4,25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 62.5...63.5

1000 : (60.5...65.5)

Spread cm3 : 3,00

1000 : (5,00)

RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 9.00

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1060...1090

3rd rack travel in: 4.00

Speed rpm : 1080...1110
4th rack travel in: 1240
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.1

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed rpm : 410...470

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 10.00...10.10
2nd speed rpm : 500
Rack travel in m: 10.50...10.60
4th speed rpm : 855
Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del. quantity cm³/ : 59.0...61.0
1000 s: (56.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 135.0...145.0
1000 s: (132.0...148.0)
Rack travel in mm : 19.50...21.00

Remarks:

: FENDT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 36
 Edition : 05.08.88
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 400 863 015

Injection pump
 Pump designation : PES3A85D410/3RS2642
 EP type number : 0 410 883 989
 Governor
 Governor design. : RSV325...1200A2C2102
 -4L
 Governor no. : 0 420 232 509

Customer-spec. information
 Customer : KHD

Engine : F3L913

1st version kW : 44.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

MO8

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 2

Phasing : 0-120-240
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.30...10.40

Del. quantity cm3/ : 6.8...6.9
 100 s: (6.6...7.1)

Spread cm3 : 0.3
 100 s: (0.5)

2nd speed rpm : 325.0
 Rack travel in mm : 7.9...8.1
 Del. quantity cm3/ : 0.9...1.6
 100 s: (0.7...1.8)

Spread cm3 : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del. quantity : 68.5...69.5
 1000 : (66.5...71.5)

Spread cm3 : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 46...54

Testing:
 1st rack travel in: 9.30
 Speed rpm : 1240...1250
 2nd rack travel in: 4.00
 Speed rpm : 1275...1305
 3rd rack travel in: 4.00

Speed rpm : 1295...1325
4th rack travel in: 1460
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 7.90...8.10
Rack travel in mm : 2.00
Speed rpm : 430...490

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.30...10.40
2nd speed rpm : 500
Rack travel in m: 10.70...10.90
4th speed rpm : 875
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm³/ : 59.0...61.0
1000 s: (56.5...63.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...150.0
1000 s: (137.0...153.0)
Rack travel in mm : 19.50...21.00

Remarks:

; FENDT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 g 37
 Edition : 05.08.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 864 072
 Injection pump
 Pump designation : PES4A85D410/3RS2610
 EP type number : 0 410 884 951
 Governor
 Governor design. : RSV325...1200A2C2102
 -3L
 Governor no. : 0 420 232 508

Customer-spec. information
 Customer : KHD

Engine : F4L913

1st version kW : 59.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.30...10.40

Del. quantity cm³/ : 6.8...6.9

100 s: (6.6...7.1)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 8.7...8.9

Del. quantity cm³/ : 0.7...1.3

100 s: (0.5...1.5)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 68.5...69.5

1000 : (66.5...71.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 47...55

Testing:

1st rack travel in: 9.30

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1290...1320

3rd rack travel in: 4.00

Speed rpm : 1310...1340
4th rack travel in: 1475
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 18...26
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.2

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 450...510

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.30...10.40
2nd speed rpm : 750
Rack travel in m: 10.70...10.80
4th speed rpm : 835
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del. quantity cm³/ : 59.5...61.5
1000 s: (57.0...64.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 140.0...150.0
1000 s: (137.0...153.0)
Rack travel in mm : 19.50...21.00

Remarks:

: FENDT

APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 6,2 e 7
 Edition : 08.06.88
 Replaces : 18.12.87
 Test oil : ISO-4113

Combination no. : 0 400 866 123

Injection pump
 Pump designation : PES6A90D320/3RS2660
 EP type number : 0 410 896 078
 Governor
 Governor design. : RSV325...1200A0C2182
 -4R
 Governor no. : 0 420 233 213

Customer-spec. information
 Customer : MWM

Engine : TD226B-6

1st version kW : 107.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
 : (2.90...3.10)

M12

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del. quantity cm3/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.0...7.2

Del. quantity cm3/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del. quantity : 77.5...78.5

1000 : (75.5...80.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 44...52

Testing:
1st rack travel in: 9.20
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1265...1295
3rd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1455
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 15...23
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.6

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.00...7.20
Rack travel in mm : 2.00
Speed rpm : 505...565

TORQUE CONTROL

Dimension a mm : 0.85
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 10.20...10.30
2nd speed rpm : 500
Rack travel in m: 11.00...11.10
4th speed rpm : 1010
Rack travel in m: 10.60...10.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.10...11.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.20
2nd pressure hPa : 250
Rack travel in m: 10.80...10.90
3rd pressure hPa : 180
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 700
Speed rpm : 600
Del.quantity cm3/ : 75.5...77.5
1000 s: (73.0...80.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 61.0...62.0
1000 s: (58.0...64.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.20
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 128.0...138.0
1000 s: (125.0...141.0)
Rack travel in mm : 19.50...21.00

Remarks:
:

APPLICATION
Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 e 2
 Edition : 15.06.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 866 124
 Injection pump
 Pump designation : PES6A100D320/3RS2691
 EP type number : 9 410 230 025
 Governor
 Governor design. : RSV400...1250AOC2216
 -2R
 Governor no. : 0 420 233 217

Customer-spec. information
 Customer : C.D.C.

Engine : 6 CT 830

1st version kW : 160.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

 Rack travel in mm : 12.00...12.10

 Del. quantity cm3/ : 12.1...12.3

 100 s: (11.9...12.5)

 Spread cm3 : 0.3

 100 s: (0.6)

2nd speed rpm : 400.0
 Rack travel in mm : 5.7...5.9
 Del. quantity cm3/ : 1.6...2.0
 100 s: (1.3...2.2)
 Spread cm3 : 0.3
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Del. quantity : 121.0...123.0
 1000 : (119.0...125.0)
 Spread cm3 : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 58...66

Testing:

1st rack travel in: 11.00
Speed rpm : 1290...1300
2nd rack travel in: 4.00
Speed rpm : 1395...1425
4th rack travel in: 1500
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 33...41
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 510...570

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 12.00...12.10
2nd speed rpm : 750
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del. quantity cm³/ : 122.0...126.0
1000 s: (120.0...128.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1290...1300

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 135.0...155.0
1000 s: (130.0...160.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

M15

Rack travel in mm : 5.70...5.90
Del. quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Adjust stop lever to 0.5...1.0 mm
before stop.
Start-of-delivery mark 11° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 r
Edition : 19.08.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 866 125

Injection pump
Pump designation : PES6A85D410/3RS2761
EP type number : 0 410 886 895
Governor
Governor design. : RSV325...1150A8C674-1L
Governor no. : 0 420 232 518

Customer-spec. information
Customer : KHD

Engine : BF6L913

1st version kW : 112.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
: (2.45...2.65)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.00...12.10

Del. quantity cm³/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm³ : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.3...7.5

Del. quantity cm³/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del. quantity : 84.5...85.5

1000 : (82.5...87.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 11.00

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1230...1260

3rd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1460
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 600...660

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 12.00...12.10
2nd speed rpm : 800
Rack travel in m: 12.30...12.40
3rd speed rpm : 950
Rack travel in m: 12.20...12.30

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.20...11.30
2nd pressure hPa : 450
Rack travel in m: 12.10...12.20
3rd pressure hPa : 300
Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 800
Del. quantity cm³/ : 83.0...85.0
1000 s: (80.5...87.5)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : 62.0...64.0
1000 s: (60.0...66.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 110.0...120.0
1000 s: (107.0...123.0)
Rack travel in mm : 17.00...17.40

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 6.2 g
Edition : 05.08.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 866 130
Injection pump
Pump designation : PES6A90D320/3RS2766
EP type number : 0 410 896 087
Governor
Governor design. : RSV325...1075A0C2182
-6R
Governor no. : 0 420 233 227

Customer-spec. information
Customer : MWM

Engine : TD226B-6

1st version kW : 106.0
Rated speed : 2150

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : -1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 3.50...4.50

BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 10.90...11.00

Del. quantity cm3/ : 8.1...8.2

100 s: (7.9...8.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 6.9...7.1

Del. quantity cm3/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075

Aneroid pressure h: 700

Del. quantity : 81.5...82.5

1000 : (79.5...84.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever
position degrees: 37...45

Testing:

1st rack travel in: 9.00
Speed rpm : 1115...1125
2nd rack travel in: 4.00
Speed rpm : 1140...1170
3rd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1330
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 14...22
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.5

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 6.90...7.10
Rack travel in mm : 2.00
Speed rpm : 495...555

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1075
Rack travel in m: 10.90...11.00
2nd speed rpm : 500
Rack travel in m: 12.00...12.10
3rd speed rpm : 890
Rack travel in m: 11.40...11.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.00...12.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.40
2nd pressure hPa : 250
Rack travel in m: 11.40...11.50
3rd pressure hPa : 150
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 500
Del.quantity cm3/ : 86.0...88.0
1000 s: (83.5...90.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 62.0...63.0
1000 s: (60.0...65.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...135.0
1000 s: (122.0...138.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAS 5,5 e 1
 Edition : 8.9.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 874 154
 Injection pump
 Pump designation : PES4A85C420LS2263
 Governor
 Governor design. : RSV375...1000A2B519D
 R

Customer-spec. information
 Customer : J.I.CASE

Engine : A 336 BD

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 471 413 000

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter
 x Wall thickness
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00
 Firing order : 1-3-4-2

Phasing : 0-90-180-270
 Tolerance + - ° : 0,50 (0,75)

M20

BASIC SETTING

1st speed rpm : 1000

 Rack travel in mm : 9.00...9.10

 Del.quantity cm3/ : 4.1...4.5

 100 s : (-)

 Spread cm3 : 0.4

 100 s : (-)

 2nd speed rpm : 1000
 Rack travel in mm : 12.00
 Del.quantity cm3/ : 7.2...8.0
 100 s : (-)
 Spread cm3 : -
 100 s : (-)
 3rd speed rpm : 200
 Rack travel in mm : 6.00
 Del.quantity cm3/ : 0.9...1.7
 100 s : (-)
 Spread cm3 : -
 100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.40

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1000
 Del.quantity : 90.5...92.5
 1000 : (-)
 Spread cm3 : -
 1000 : (-)

RATED SPEED

1st version
 Control lever
 position degrees: 36...44

Testing:
 1st rack travel in: 12.60
 Speed rpm : 1020...1040
 2nd rack travel in: 4.00
 Speed rpm : 1105...1135
 4th rack travel in: 1220
 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 7.8

Testing:

Speed rpm : 150
Minimum rack trave: 19.00
Speed rpm : 375
Rack travel in mm : 7.50...8.10
Rack travel in mm : 4.80
Speed rpm : 430...470
Speed rpm : 600
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: -
2nd speed rpm : 800
Rack travel in m: 0.50...0.70
3rd speed rpm : 500
Rack travel in m: 0.60...0.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 100.5...104.5
1000 s: (-)
Spread cm3 : -
1000 s: (-)

BREAKAWAY

1st version

Speed rpm : 1040

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 124.0...134.0
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1100
Del.quantity cm3/ : 11.5...19.5
1000 s: (-)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 375

M21

Del.quantity cm3/ : 18.5...21.5
1000 s: (-)

Remarks:

: J.I.CASE NO. A-62569

Adjustment without torque-control
spring retainer with 1 mm less
APPLICATION travel. Increase in
Tractor (tractor engines) rque-control
pring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 c
 Edition : 02.09.88
 Replaces : 2.11.87
 Test oil : ISO-4113

Combination no. : 0 400 874 243

Injection pump
 Pump designation : PES4A90D41ORS2666-2
 EP type number : 0 410 894 033
 Governor
 Governor design. : RSV350...1200A2C1139
 -2L
 Governor no. : 0 420 232 471

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 50.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

 Rack travel in mm : 9.40...9.50

 Del. quantity cm³/ : 4.9...5.0

 100 s : (4.7...5.2)

 Spread cm³ : 0.3

 100 s : (0.5)

 2nd speed rpm : 350.0
 Rack travel in mm : 8.1...8.7
 Del. quantity cm³/ : 1.0...1.2
 100 s : (0.8...1.4)
 Spread cm³ : 0.2
 100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del. quantity : 49.0...50.0
 1000 : (47.0...52.0)
 Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 49...57

Testing:
 1st rack travel in: 8.40
 Speed rpm : 1240...1245
 2nd rack travel in: 4.00
 Speed rpm : 1284...1297
 3rd rack travel in: 4.00

Speed rpm : 1323...1353
4th rack travel in: 1530
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 8.40

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 8.30...8.50
Rack travel in mm : 2.00
Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 9.40...9.50
2nd speed rpm : 800
Rack travel in m: 10.50...10.60
3rd speed rpm : 950
Rack travel in m: 10.30...10.50
4th speed rpm : 1050
Rack travel in m: 9.70...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del. quantity cm³/ : 45.0...47.0
1000 s: (42.5...49.5)
Speed rpm : 1000
Del. quantity cm³/ : 48.0...51.0
1000 s: (45.5...53.5)

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 80.0...90.0
1000 s: (77.0...93.0)
Rack travel in mm : 16.20...16.60

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.10...8.70
Del. quantity cm³/ : 10.0...12.0
1000 s: (8.0...14.0)
Spread cm³ : 2.50
1000 s: (4.50)

Remarks:

M23

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4.0 c 1
 Edition : 02.09.88
 Replaces : 9.3.87
 Test oil : ISO-4113
 Combination no. : 0 400 874 244
 Injection pump
 Pump designation : PES4A90D410RS2666-2
 EP type number : 0 410 894 033
 Governor
 Governor design. : RSV350...1200A2C1139
 -3L
 Governor no. : 0 420 232 472
 Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM364

1st version kW : 57.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 10.50...10.60
 Del. quantity cm³/ : 5.5...5.6
 100 s: (5.3...5.8)
 Spread cm³ : 0.3
 100 s: (0.5)

2nd speed rpm : 350.0
 Rack travel in mm : 8.1...8.9
 Del. quantity cm³/ : 1.0...1.2
 100 s: (0.8...1.4)
 Spread cm³ : 0.2
 100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del. quantity : 55.0...56.0
 1000 : (53.0...58.0)
 Spread cm³ : 3.00
 1000 : (5.00)

RATED SPEED

1st version
 Control lever
 position degrees: 54...62

Testing:
 1st rack travel in: 9.50
 Speed rpm : 1240...1245
 2nd rack travel in: 4.00
 Speed rpm : 1298...1311
 3rd rack travel in: 4.00

Speed rpm : 1331...1361
4th rack travel in: 1450
Speed rpm : 0.30...1.40
5th rack travel in: 1240...1250
Speed rpm : 9.50

LOW IDLE 1

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Rack travel in mm : 2.00
Speed rpm : 520...580

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 10.50...10.60
2nd speed rpm : 800
Rack travel in m: 12.00...12.10
3rd speed rpm : 950
Rack travel in m: 11.70...11.90
4th speed rpm : 1050
Rack travel in m: 11.00...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800
Del.quantity cm3/ : 56.0...58.0
1000 s: (53.5...60.5)
Speed rpm : 1050
Del.quantity cm3/ : 56.0...58.0
1000 s: (53.5...60.5)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 80.0...90.0
1000 s: (77.0...93.0)
Rack travel in mm : 16.10...16.50

LOW IDLE

Speed rpm : 350
Rack travel in mm : 8.10...8.90
Del.quantity cm3/ : 10.0...12.0
1000 s: (8.0...14.0)
Spread cm3 : 2.50
1000 s: (4.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 3,4 a
Edition : 11.07.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 874 245
Injection pump
Pump designation : PES4A85D410RS2746
EP type number : 0 410 884 946
Governor
Governor design. : RSV300...1100A1C2227
Governor no. : 0 420 232 491
Customer-spec. information
Customer : STEYR

Engine : WD411.87/88/91

1st version kW : 57.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.85...2.95
: (2.80...3.00)

Rack travel in mm : 9.00...12.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.40...10.50

Del. quantity cm³/ : 6.7...6.8

100 s : (6.5...7.0)

Spread cm³ : 0.3

100 s : (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del. quantity cm³/ : 1.0...1.6

100 s : (0.8...1.7)

Spread cm³ : 0.2

100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 67.5...68.5

1000 : (65.5...70.5)

Spread cm³ : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 50...58

Testing:

1st rack travel in: 9.40

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1155...1185
3rd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1335
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 300
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.40...10.50
2nd speed rpm : 500
Rack travel in m: 11.30...11.40
4th speed rpm : 915
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del. quantity cm³/ : 65.0...67.0
1000 s: (62.5...69.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 95.0...105.0
1000 s: (92.0...108.0)
Rack travel in mm : 19.50...21.00

Remarks:

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APPLICATION

Tractor (tractor engines)

M27

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BUK 4,5 a
Edition : 09.09.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 400 876 143
Injection pump
Pump designation : PES6A80D42OLS2093
EP type number : 0 410 886 051
Governor
Governor design. : RSV250...900A1C197DR
Governor no. : 0 420 233 223..

Customer-spec. information
Customer : BUKH/DANEMARK

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Inlet press., bar : 1.50
Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25
: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

M28

BASIC SETTING

1st speed rpm : 880
Rack travel in mm : 10.00...10.10
Del. quantity cm³/ : 5.8...5.9
100 s : (5.6...6.0)
Spread cm³ : 0.2
100 s : (0.4)
2nd speed rpm : 250.0
Rack travel in mm : 6.4...6.6
Del. quantity cm³/ : 1.0...1.6
100 s : (0.8...1.7)
Spread cm³ : 0.2
100 s : (0.3)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 880
Del. quantity : 58.5...59.5
1000 : (56.5...60.5)
Spread cm³ : 2.50
1000 : (4.00)

RATED SPEED

1st version
Control lever
position degrees: 39...47

Testing:
1st rack travel in: 9.00
Speed rpm : 920...930
2nd rack travel in: 4.00
Speed rpm : 930...960
3rd rack travel in: 4.00
Speed rpm : 955...985
4th rack travel in: 1120
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 250

Rack travel in mm : 6.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 250
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 415...475

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 880
Rack travel in m: 10.00...10.10
2nd speed rpm : 500
Rack travel in m: 11.00...11.10
3rd speed rpm : 670
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 700
Del. quantity cm³/ : 62.0...64.0
1000 s: (60.0...66.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.00
Speed rpm : 920...930

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CAS 8,3 f 1
Edition : 9.9.88
Replaces : -
Test oil : ISO-4113

Combination no. : 0 400 876 160

Injection pump
Pump designation : PES6A85D42OLS2264
Governor
Governor design. : RSV375...1000A2B596D
R

Customer-spec. information
Customer : J.I.CASE

Engine : A-401 BD

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : WS 187 P (CASE)

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter
x Wall thickness
x Length mm : 6,00X2,00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25
: (2.10...2.30)
Rack travel in mm : 9.00
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 9.00...9.10
Del. quantity cm³/ : 4.3...4.5
100 s : (-)
Spread cm³ : -
100 s : (-)

2nd speed rpm : 200
Rack travel in mm : 5.90...6.10
Del. quantity cm³/ : 1.1...1.7
100 s : (-)
Spread cm³ : -
100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.40

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Del. quantity : 65.5...66.5
1000 : (64.5...67.5)
Spread cm³ : -
1000 : (-)

RATED SPEED

1st version
Control lever
position degrees: 41...49

Testing:
1st rack travel in: 10.80
Speed rpm : 1040...1055
2nd rack travel in: 5.10
Speed rpm : 1085...1115
4th rack travel in: 1230
Speed rpm : 0.20...1.20

LOW IDLE 1

Control lever
position degrees: 22...30
Setting point w/out bumper spring

Speed rpm : 375
Rack travel in mm : 6.50

Del.quantity cm³/ : 12.5...16.5
1000 s: (-)

Testing:

Speed rpm : 150
Minimum rack trave: 19.00
Speed rpm : 375
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.40
Speed rpm : 480...520
Speed rpm : 650
Maximum rack trave: 1.00

Remarks:
APPLICATION
Tractor (tractor engines)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: -
2nd speed rpm : 800
Rack travel in m: 1.00...1.20
3rd speed rpm : 450
Rack travel in m: 1.60...1.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 650
Del.quantity cm³/ : 81.0...84.0
1000 s: (80.0...85.0)
Spread cm³ : -
1000 s: (-)
Speed rpm : 550
Del.quantity cm³/ : <83.5
1000 s: (-)
Spread cm³ : -
1000 s: (-)

BREAKAWAY

1st version
Speed rpm : 1040...1055

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 124.0...134.0
1000 s: (-)

HIGH IDLE

1st version
Speed rpm : 1100
Del.quantity cm³/ : 7.50...11.50
1000 s: (-)

LOW IDLE

Speed rpm : 375

N03

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5.7 in 10
 Edition : 16.06.88
 Replaces : 11.12.87
 Test oil : ISO-4113
 Combination no. : 0 400 876 188
 Injection pump
 Pump designation : PES6A80D41ORS2085X
 EP type number : 0 410 886 045
 Governor
 Governor design. : RSV350...1400A2C1052
 L
 Governor no. : 0 420 232 406

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM352

1st version kW : 80.9
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25
 : (2.10...2.30)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.00...9.10

Del. quantity cm³/ : 5.2...5.3

100 s : (5.0...5.4)

Spread cm³ : 0.2

100 s : (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.6...7.2

Del. quantity cm³/ : 1.0...1.2

100 s : (0.8...1.3)

Spread cm³ : 0.2

100 s : (0.3)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del. quantity : 52.0...53.0

1000 : (50.5...54.5)

Spread cm³ : 2.50

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 8.00

Speed rpm : 1450...1455

2nd rack travel in: 4.00

Speed rpm : 1488...1501

3rd rack travel in: 4.00

Speed rpm : 1500...1530

4th rack travel in: 1680
Speed rpm : 0.30...1.40

LOW IDLE 1

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 350
Rack travel in mm : 6.80...7.00
Rack travel in mm : 2.00
Speed rpm : 600...660

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1400
Rack travel in m: 9.00...9.10
2nd speed rpm : 500
Rack travel in m: 9.80...9.90
3rd speed rpm : 850
4th speed rpm : 950
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500
Del.quantity cm3/ : 47.0...49.0
1000 s: (45.0...51.0)
Speed rpm : 850
Del.quantity cm3/ : 50.0...53.0
1000 s: (48.0...55.0)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 14.20...14.60

LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.60...7.20
Del.quantity cm3/ : 10.0...12.0
1000 s: (8.5...13.5)
Spread cm3 : 2.00
1000 s: (3.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 6,6 f 1
 Edition : 9.9.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 212
 Injection pump
 Pump designation : PES6A95D410RS2380
 Governor
 Governor design. : RSV400...1200A2B721D
 L

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6404 T

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 413 417 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 9 681 230 706

Outside diameter
 x Wall thickness
 x Length mm : 6,00X2,00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Prestroke mm : 1,90...2,00
 : (1,85...2,05)
 Rack travel in mm : 9,00
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000
 Rack travel in mm : 9.00
 Del. quantity cm3/ : 7.6...8.0
 100 s : (-)
 Spread cm3 : 0.4
 100 s : (-)
 2nd speed rpm : 1000
 Rack travel in mm : 5.90...6.10
 Del. quantity cm3/ : 3.4...4.2
 100 s : (-)
 Spread cm3 : -
 100 s : (-)
 3rd speed rpm : 200
 Rack travel in mm : 5.90...6.10
 Del. quantity cm3/ : 0.6...1.4
 100 s : (-)
 Spread cm3 : -
 100 s : (-)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.40

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del. quantity : 83.5...89.5
 1000 : (-)
 Spread cm3 : -
 1000 : (-)

RATED SPEED

1st version
 Control lever
 position degrees: 45...53

Testing:
 1st rack travel in: 8.80
 Speed rpm : 1235...1255
 2nd rack travel in: 4.80
 Speed rpm : 1280...1310
 4th rack travel in: 1450

Speed rpm : 0.30...1.00

LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 5.80

Testing:

Speed rpm : 200

Minimum rack trave: 19.00

Speed rpm : 400

Rack travel in mm : 5.50...6.10

Rack travel in mm : 3.00

Speed rpm : 520...580

Speed rpm : 720

Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: -

2nd speed rpm : 600

Rack travel in m: 0.50...0.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del.quantity cm3/ : 92.5...99.5

1000 s: (-)

Spread cm3 : -

1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 1235...1255

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 159.0...179.0

1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1295

Del.quantity cm3/ : 18.5...24.5

1000 s: (-)

LOW IDLE

NO7

Speed rpm : 400

Del.quantity cm3/ : 12.0...16.0

1000 s: (-)

Remarks:

: JOHN DEERE NO.

: AR 67661

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

APPLICATION

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 e 5
 Edition : 09.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 274
 Injection pump
 Pump designation : PES6A9SD41ORS2471
 EP type number : 0 410 896 952
 Governor
 Governor design. : RSV325...1150A8C707L
 Governor no. : 0 420 232 335

Customer-spec. information
 Customer : KHD

Engine : BF6L913C

1st version kW : 132.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

Rack travel in mm : 9.00...12.00

N08

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 10.8...11.0

100 s: (10.6...11.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0

Rack travel in mm : 7.2...7.4

Del.quantity cm3/ : 0.9...1.5

100 s: (0.6...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 700

Del.quantity : 108.0...110.0

1000 : (106.0...112.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 10.80

Speed rpm : 1190...1200

2nd rack travel in: 4.00

Speed rpm : 1235...1265

3rd rack travel in: 4.00

Speed rpm : 1285...1315
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 6.8

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00
Speed rpm : 585...645

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1150
Rack travel in m: 11.80...11.90
2nd speed rpm : 500
Rack travel in m: 11.80...12.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.90...10.00
2nd pressure hPa : 373
Rack travel in m: 11.50...11.60
3rd pressure hPa : 93
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 850
Del.quantity cm3/ : 103.5...106.5
1000 s: (101.0...109.0)
Spread cm3 : -
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 62.0...64.0
1000 s: (60.0...66.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 15.50...15.90

Remarks:

:

On activation of the starting solenoid,
the start position must be reached.

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 v 18
 Edition : 09.09.88
 Replaces : 26.6.87
 Test oil : ISO-4113

Combination no. : 0 400 876 293

Injection pump
 Pump designation : PES6A90D41ORS2596
 EP type number : 0 410 896 073
 Governor
 Governor design. : RSV350...1400AOC1141
 L
 Governor no. : 0 420 232 423

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM352A

1st version kW : 123.0
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp, °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

N10

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.90...12.00

Del. quantity cm3/ : 7.4...7.5

100 s : (7.2...7.7)

Spread cm3 : 0.3

100 s : (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 7.8...8.4

Del. quantity cm3/ : 1.0...1.2

100 s : (0.8...1.4)

Spread cm3 : 0.2

100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h: 700

Del. quantity : 74.0...75.0

1000 : (72.0...77.0)

Spread cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 10.90

Speed rpm : 1435...1440

2nd rack travel in: 4.00

Speed rpm : 1475...1488

3rd rack travel in: 4.00
Speed rpm : 1520...1550
4th rack travel in: 1680
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: -3
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 8.10

Testing:

Speed rpm : 100
Minimum rack travel: 16.00
Speed rpm : 350
Rack travel in mm : 8.00...8.20
Rack travel in mm : 2.00
Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1400
Rack travel in m: 11.90...12.00
2nd speed rpm : 900
Rack travel in m: 13.00...13.10
3rd speed rpm : 1050
Rack travel in m: 12.70...12.90
4th speed rpm : 1260
Rack travel in m: 11.90...12.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.30...11.40
2nd pressure hPa : 500
Rack travel in m: 12.60...12.70
3rd pressure hPa : 275
Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm³/ : 75.0...78.0
1000 s: (72.5...80.5)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 50.0...51.0
1000 s: (48.0...53.0)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)
Rack travel in mm : 16.10...16.50

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.80...8.40
Del.quantity cm³/ : 10.0...12.0
1000 s: (8.0...14.0)
Spread cm³ : 2.50
1000 s: (4.50)

Remarks:

Hydraulic latching of starting
delivery.

Latching at 0.45 bar...0.55 bar.

Unlatching at 0.25 bar...0.35 bar.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 5,7 v 21
 Edition : 09.09.88
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 400 876 295
 Injection pump
 Pump designation : PES6A90D410RS2596
 EP type number : 0 410 896 073
 Governor
 Governor design. : RSV750...1250A1C618-1L
 Governor no. : 0 420 232 513
 Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM352

1st version kW : 119.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2,00...2,10
 : (1,95...2,15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1230
 Rack travel in mm : 13.20...13.30
 Del. quantity cm³/ : 7.7...7.8
 100 s : (7.5...8.0)
 Spread cm³ : 0.3
 100 s : (0.4)

2nd speed rpm : 750.0
 Rack travel in mm : 7.0...7.2
 Del. quantity cm³/ : 0.9...1.5
 100 s : (0.7...1.7)
 Spread cm³ : 0.2
 100 s : (0.4)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1230
 Del. quantity : 77.5...78.5
 1000 : (75.5...80.5)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees: 55...63

Testing:
 1st rack travel in: 12.20
 Speed rpm : 1250...1255
 2nd rack travel in: 4.00
 Speed rpm : 1274...1291
 4th rack travel in: 1445

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 32...40

Setting point w/out bumper spring

Speed rpm : 750

Rack travel in mm : 7.1

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 750

Rack travel in mm : 7.00...7.20

Rack travel in mm : 2.00

Speed rpm : 750...810

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 80.0...90.0

1000 s: (77.0...93.0)

Rack travel in mm : 16.60...17.00

Remarks:

:

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 c 2
 Edition : 24.06.88
 Replaces : 25.3.88
 Test oil : ISO-4113
 Combination no. : 0 400 876 335
 Injection pump
 Pump designation : PES6A90D410RS2710
 EP type number : 0 410 896 082
 Governor
 Governor design. : RSV350...1200A1C1154
 L
 Governor no. : 0 420 232 468

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 74.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.30...9.40

Del. quantity cm³/ : 5.1...5.2

100 s: (4.9...5.4)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 370.0

Rack travel in mm : 7.9...8.5

Del. quantity cm³/ : 1.0...1.2

100 s: (0.8...1.4)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 51.0...52.0

1000 : (49.0...54.0)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever
 position degrees: 59...67

Testing:

1st rack travel in: 8.30

Speed rpm : 1240...1245

2nd rack travel in: 4.00

Speed rpm : 1261...1274

3rd rack travel in: 4.00

Speed rpm : 1300...1330

4th rack travel in: 1400

Speed rpm : 0.30...1.40

5th rack travel in: 1255...1265

Speed rpm : 8.30

LOW IDLE 1

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 370
Rack travel in mm : 8.10...8.30
Rack travel in mm : 2.00
Speed rpm : 460...520

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200
Rack travel in m: 9.30...9.40
2nd speed rpm : 600
Rack travel in m: 10.00...10.20
3rd speed rpm : 900
Rack travel in m: 9.80...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 41.0...43.0
1000 s: (38.5...45.5)
Speed rpm : 900
Del.quantity cm³/ : 46.0...49.0
1000 s: (43.5...51.5)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 85.0...95.0
1000 s: (82.0...98.0)
Rack travel in mm : 16.80...17.20

LOW IDLE

Speed rpm : 370
Rack travel in mm : 7.90...8.50
Del.quantity cm³/ : 10.0...12.0
1000 s: (8.0...14.0)
Spread cm³ : 2.50
1000 s: (4.50)

Remarks:

;

APPLICATION

Unimog

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 c 3
 Edition : 02.09.88
 Replaces : 13.5.87
 Test oil : ISO-4113
 Combination no. : 0 400 876 336
 Injection pump
 Pump designation : PES6A90D41ORS2710
 EP type number : 0 410 896 082
 Governor
 Governor design. : RSV350...1200A1C1154
 -1L
 Governor no. : 0 420 232 470

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM 366

1st version kW : 81.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.25...2.35
 : (2.20...2.40)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.80...9.90

Del. quantity cm³/ : 5.3...5.4

100 s : (5.1...5.6)

Spread cm³ : 0.3

100 s : (0.4)

2nd speed rpm : 370.0

Rack travel in mm : 7.8...8.4

Del. quantity cm³/ : 1.0...1.2

100 s : (0.8...1.4)

Spread cm³ : 0.2

100 s : (8.4)

GUIDE SLEEVE POSITION

Governor spring pre-tension
 Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del. quantity : 53.0...54.0
 1000 : (51.0...56.0)
 Spread cm³ : 3.00
 1000 : (4.50)

RATED SPEED

1st version
 Control lever
 position degrees : 59...67

Testing:
 1st rack travel in : 8.80
 Speed rpm : 1240...1245
 2nd rack travel in : 4.00
 Speed rpm : 1262...1275
 3rd rack travel in : 4.00
 Speed rpm : 1305...1335
 4th rack travel in : 1400
 Speed rpm : 0.30...1.40
 5th rack travel in : 1250...1260

Speed rpm : 8.80

APPLICATION
Unimog

LOW IDLE 1

Control lever

position degrees: -3

Setting point w/out bumper spring

Speed rpm : 370

Rack travel in mm : 8.10

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 370

Rack travel in mm : 8.00...8.20

Rack travel in mm : 2.00

Speed rpm : 470...530

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.80...9.90

2nd speed rpm : 600

Rack travel in m: 11.30...11.40

3rd speed rpm : 850

Rack travel in m: 11.10...11.30

4th speed rpm : 950

Rack travel in m: 10.30...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 50.0...52.0

1000 s: (47.5...54.5)

Speed rpm : 850

Del.quantity cm3/ : 51.0...54.0

1000 s: (48.5...56.5)

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 85.0...95.0

1000 s: (82.0...98.0)

Rack travel in mm : 17.10...17.50

LOW IDLE

Speed rpm : 370

Rack travel in mm : 7.80...8.40

Del.quantity cm3/ : 10.0...12.0

1000 s: (8.0...14.0)

Spread cm3 : 2.50

1000 s: (84.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 6.2 o 4
 Edition : 16.05.88
 Replaces : 12.6.87
 Test oil : ISO-4113

Combination no. : 0 400 876 341

Injection pump
 Pump designation : PES6A9SD32ORS2693
 EP type number : 0 410 896 914
 Governor
 Governor design. : RSV250...750A7C2206-1R
 Governor no. : 0 420 233 209

Customer-spec. information
 Customer : DAF

Engine : DNTD620/1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
 & maximum rack tra: 21.00
 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.70...12.80

Del. quantity cm3/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...6.6

Del. quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
 position degrees: 41...49

Testing:

1st rack travel in: 11.70
Speed rpm : 745...750
2nd rack travel in: 4.00
Speed rpm : 775...790
4th rack travel in: 935
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.5
Speed rpm : 300
Rack travel in mm : 6.40...6.60
Rack travel in mm : 2.00
Speed rpm : 300...360

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del. quantity cm³/ : 7.0...11.0
1000 s: (4.5...13.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 1 o 1
 Edition : 08.06.88
 Replaces : 7.1.88
 Test oil : ISO-4113

Combination no. : 0 400 876 344

Injection pump
 Pump designation : PES6A95D41ORS262S
 EP type number : 0 410 896 926
 Governor
 Governor design. : RSV325...1250A2C1159
 L
 Governor no. : 0 420 232 490

Customer-spec. information
 Customer : KHD

Engine : BF6L913C

1st version kW : 130.0
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 1.90...2.00
 : (1.85...2.05)

N20

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.10...11.20

Del. quantity cm³/ : 8.9...9.0
 100 s : (8.7...9.2)

Spread cm³ : 0.3
 100 s : (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 6.4...6.6
 Del. quantity cm³/ : 1.0...1.6
 100 s : (0.7...1.8)

Spread cm³ : 0.3
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h : 900
 Del. quantity : 89.0...90.0
 1000 : (87.0...92.0)

Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
 Control lever
 position degrees: 40...48

Testing:
 1st rack travel in: 10.10
 Speed rpm : 1290...1300
 2nd rack travel in: 4.00
 Speed rpm : 1320...1350

3rd rack travel in: 4.00
Speed rpm : 1345...1375
4th rack travel in: 1540
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 5.40...5.60
Rack travel in mm : 2.00
Speed rpm : 515...565

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 11.10...11.20
2nd speed rpm : 500
Rack travel in m: 11.10...11.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.10...10.20
2nd pressure hPa : 400
Rack travel in m: 10.90...11.00
3rd pressure hPa : 330
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 54.0...56.0
1000 s: (52.0...58.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

N21

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.10
Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...130.0
1000 s: (117.0...133.0)
Rack travel in mm : 17.10...17.30

Remarks: :

APPLICATION

Combine-harvester

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 w
Edition : 15.06.88
Replaces : 14.1.88
Test oil : ISO-4113

Combination no. : 0 400 876 345

Injection pump
Pump designation : PES6A100D410RS2754
EP type number : 0 410 806 002
Governor
Governor design. : RSV400...1100A2C2229
L
Governor no. : 0 420 232 492

Customer-spec. information
Customer : JOHN DEERE

Engine : 6076 TF

1st version kW : 142.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

N22

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del. quantity cm³/ : 12.0...12.2

100 s: (11.8...12.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...5.2

Del. quantity cm³/ : 1.9...2.3

100 s: (1.6...2.5)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 120.0...122.0

1000 : (118.0...124.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1205...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 550...610

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.90...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del. quantity cm³/ : 151.0...154.0
1000 s: (148.5...156.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 130.0...150.0
1000 s: (125.0...155.0)
Rack travel in mm : 19.40

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.00...5.20
Del. quantity cm³/ : 19.0...23.0
1000 s: (16.5...25.5)

Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

Adjustment without torque-control
spring retainer with 1 mm less
Start-of-delivery mark = 12,5° after
start of delivery cyl. 1. rque-control
spring retainer.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 h11
Edition : 15.06.88
Replaces : 14.1.88
Test oil : ISO-4113

Combination no. : 0 400 876 347

Injection pump
Pump designation : PES6A100D41ORS2676
EP type number : 9 410 230 023
Governor
Governor design. : RSV600...1100A202161
-5L
Governor no. : 0 420 232 495

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466AZ-02

1st version kW : 130.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 017

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness : 6.00X2.00X600
x Length mm

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55
: (2.40...2.60)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.10...10.20

Del. quantity cm3/ : 11.1...11.3

100 s: (10.9...11.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 4.4...4.6

Del. quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 500

Del. quantity : 111.0...113.0

1000 : (109.0...115.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:
1st rack travel in: 9.10
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1195...1205
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 23...31
Setting point w/out bumper spring
Speed rpm : 600
Rack travel in mm : 4.0

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 600
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 690...750

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.10...10.20
2nd speed rpm : 950
Rack travel in m: 10.80...11.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 93
Rack travel mm : 9.00...9.10

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.30...8.50
2nd pressure hPa : 146
Rack travel in m: 9.80...10.20
3rd pressure hPa : 500
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 500
Speed rpm : 950
Del. quantity cm³/ : 119.0...122.0
1000 s: (116.5...124.5)
Aneroid pressure h: -
Speed rpm : 500

Del. quantity cm³/ : -
1000 s: (66.0...74.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.10
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 190.0...210.0
1000 s: (185.0...215.0)
Rack travel in mm : 19.40...19.40

LOW IDLE

Speed rpm : 600
Rack travel in mm : 4.40...4.60
Del. quantity cm³/ : 11.0...15.0
1000 s: (8.5...17.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Setting without torque-control spring
retainer with 1 mm control-rod travel
less. Raising of full-load delivery
with torque-control spring retainer to
10.1 mm control-rod travel.

Start-of-delivery mark = 15.5° after
start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 x
Edition : 15.06.88
Replaces : 14.1.88
Test oil : ISO-4113

Combination no. : 0 400 876 348

Injection pump
Pump designation : PES6A100D41ORS2754
EP type number : 0 410 806 002
Governor
Governor design. : RSV400...1100A2C2204
-2L
Governor no. : 9 420 234 177

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466 TT

1st version kW : 124.0
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 457 413 010

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 130...150

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.95...3.05
: (2.90...3.10)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del. quantity cm³/ : 1.2...1.6

100 s: (0.9...1.8)

Spread cm³ : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 105.0...107.0

1000 : (103.0...109.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever
position degrees: 44...52

Testing:

1st rack travel in: 10.00
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1205...1215
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00
Rack travel in mm : 2.00
Speed rpm : 530...590

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.00...11.10
2nd speed rpm : 700
Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700
Del.quantity cm³/ : 127.5...130.5
1000 s: (125.0...133.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...150.0
1000 s: (125.0...155.0)
Rack travel in mm : 19.40

LOW IDLE

N27

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

Adjustment without torque-control
spring retainer with 1 mm less
Start-of-delivery mark = 12,5° after
start of delivery cyl. 1. rque-control
spring retainer.